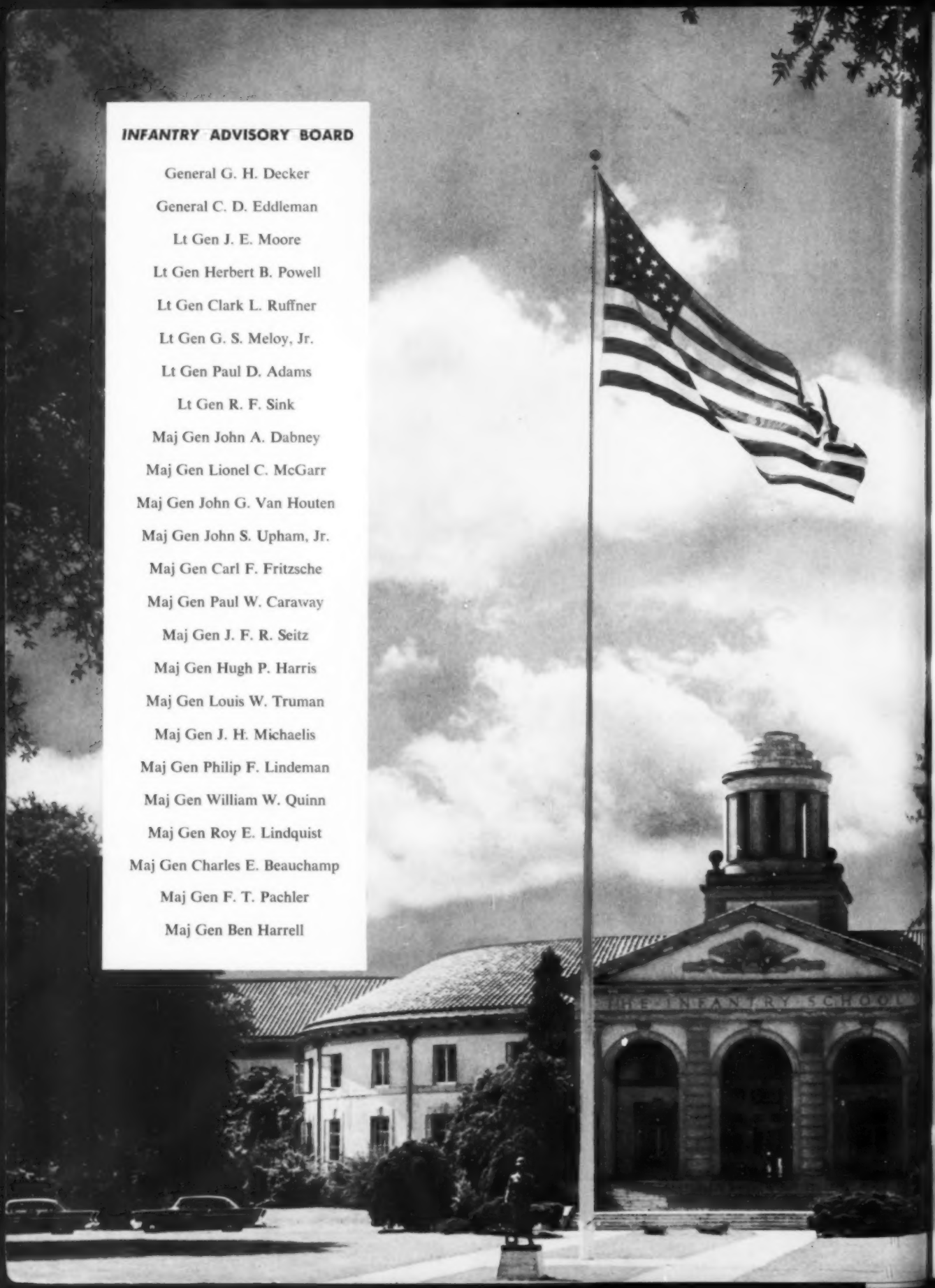
INFANTRY

The Professional Journal for Infantrymen

FEB-MAR 1960

FOR REFERENCE
Do Not Take From This Room

Combat Leader, page 40



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THE COVER

The combat leader on this month's cover is preparing himself and his men to take their place on any battlefield of the future. They cannot work just an eight-hour day nor can they confine their efforts to pleasant weather. For combat—and preparation for combat—is a round-the-clock job, since war comes at the enemy's choosing, not our own.

INFANTRY

The Professional Journal for Infantrymen

OFFICIAL PUBLICATION

UNITED STATES ARMY INFANTRY SCHOOL

Vol. 50 February-March 1960 No. 2

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Infantry's mission—As an official publication of the United States Army Infantry School, *Infantry* magazine has the mission of providing current doctrinal information on Infantry organization, weapons, equipment, tactics, and techniques. Additionally, *Infantry* has the mission of providing, through controversial and thought-provoking articles, information on new developments and doctrinal trends, thus serving as a forum for progressive military thinking.

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FROM THE VICE CHIEF OF STAFF

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF STAFF
WASHINGTON 25, D. C.

Dear Infantrymen:

In contributing to our national security, the Army performs several major tasks. It maintains forces in overseas areas critical to Free World defense. In the United States, it provides a mobile, combat-ready strategic reserve prepared to move rapidly anywhere any time. It furnishes ground defense of our homeland and contributes to its air defense. A small but important element of our Army helps train Allied armies world-wide —armies which comprise numerically 80 percent of the Free World's ground strength. Lastly, the Army maintains a base for rapid mobilization, should circumstances so require.

The Infantryman has an indispensable role in the Army. It is he who performs the ultimate act of war—physical seizure of the enemy homeland and physical domination of the people who inhabit that land. So great a responsibility demands the highest standards of preparedness and the most zealous efforts to attain individual and collective proficiency in the military arts.

Now, more than ever, combat superiority stems from peacetime training. How we train today will determine, in large measure, how we fight tomorrow. Thus there devolve upon every Infantryman two duties—learning and teaching. Not only through the Army school system, but through continuous personal study, the Infantryman must maintain a proficiency unmatched by any other Infantryman in the world. Commanders as well as instructors must give every emphasis to all aspects of training —in the classroom and in the field.

Modern war is terrible in all its aspects. The primary reason for the existence of our armed forces is to deter war. But if deterrence fails, we must be able to fight and win.

We can do this only if we *train* to win.

G. H. DECKER
General, United States Army
Vice Chief of Staff

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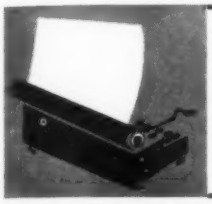


THE EDITOR SAYS

IDEAS MAKE a magazine—and in the past few months we have received many excellent ideas on how to improve *Infantry*. These recommendations have come from almost every rank and practically every part of the world. To give you some idea of the type of suggestions we have received (and to give you an inkling of what you can expect in this and future issues of *Infantry*), here are just a few:

Capt Larry Mickel, a student in the Advanced Course at the Infantry School, suggested that we feature "Tricks of the Trade" to enable Infantrymen to learn from the techniques and experience of others.

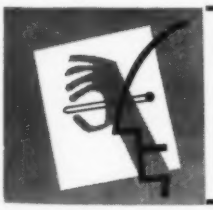
As Captain Mickel states, ". . . a feature in which the Infantryman could disseminate information on procedures, expedients, adaptations etc. . . . would be of (considerable) interest."

You will see the initial product of Captain Mickel's suggestion in this issue. We would, of course, like to see more "Tricks of the Trade" submitted from readers. So if you have a new technique or new procedure, let us know.

Lt Col William F. Long, Jr., a student at the Armed Forces Staff College, suggested a feature titled, "Principles and Personalities" in which we would show a historical application of a principle of war as it is applied by a noted battlefield personality. As Colonel Long points out, "The combination of the immutable of principle with the volatile ingredient, personality, ought to be attractive." We hope the readers agree—the first of these "Principles and Personalities" (Chancellorsville, Masterpiece of Maneuver)—is in this issue.

Another future *Infantry* feature had its genesis in an idea proposed by Brigadier General Stanley R. Larsen, Eighth United States Army in Korea: to provide a handbook for ready reference use by Infantry leaders. In this handbook we hope to provide detailed capsule-type information on Infantry weapons, tactics, techniques, equipment and doctrine. This information will be published in *Infantry* on removable clip-out sheets (2½ by 3 inches) which are suitable for use in a notebook or wallet. These sheets will include appropriate check lists, sample operation orders, weapons capabilities, etc. Periodically, we will bring this information up-to-date so that Infantrymen can have a ready reference on things they need to know.

These are just a few of the suggestions made by Infantrymen who are interested in improving their professional journal. We appreciate them —much as we would appreciate any comments or ideas you might have on improving *Infantry*.



LETTERS TO THE EDITOR

Query

Sir:

I was pleasantly amused with "Flexibility" in my January issue of *Infantry*. This is the first of this style writing I can remember since I've been a subscriber, and I think there should be a place for more in future issues. . . .

Incidentally, who is this Bill Herman who authored the article? . . . .

CHARLES J. HEBERLE
Lt, Sig C.
Fort Benning, Georgia

You are one of many who have asked—"Mr" Bill Herman is a retired Captain (Res) and speaks with considerable armor authority since he served in the 1st, 5th, 8th, 12th and 20th Armored Divisions. He is presently with HQ USCONARC and Infantry *readers may expect to hear from his again.*— Editor.

Reprints for Pakistan . . .

Sir:

We intend to reproduce in the *Pakistan Army Journal* an article, "We Must Fight At Night" by Lt Col John P. Reames, which was published in the Jan-Mar 1959 issue of your esteemed journal. . . . We will be grateful if permission to reprint the article is accorded to us at your earliest convenience.

N. D. HASAN,
Editor, Pakistan Army Journal
Rawalpindi, Pakistan

Continued on page 20

THE

The anonymous author of this piece is an Infantry officer who speaks with considerable authority on this subject. He has served extensively in Europe and the Far East.

MUCH HAS BEEN written about the Soviet Army and its soldiers, based upon observations made during or shortly after World War II. Since the 40s, however, the Red Army has been modernized in many ways and the Red soldier has undergone a similar refinement.

After World War II there were only limited opportunities for direct observation of the Soviet soldier's capacity for utilizing the tools of modern war. Consequently, information based upon personal contact has become particularly valuable. Many articles have appeared, however, which have been based upon scanty knowledge, yet still presumed to draw conclusions of a very concrete nature. This, it seems to me, is dangerous. Information is indeed valuable, but extravagant deductions, by the very fact of having been printed, gain authority and are likely to be harmful.

The opinions I express in this article are the result of a tour in Germany where I saw the Red soldier at drill, in his caserns, performing routine duties and operating in the

RED SOLDIER

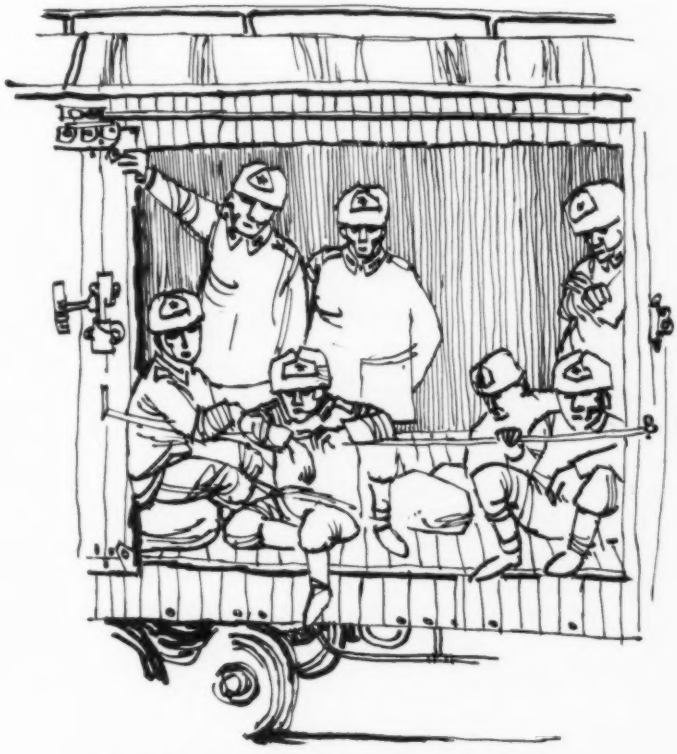
Infantry magazine presents an authoritative description — uncluttered by conjecture and based upon personal observation.

field. It is from these contacts that the few conclusions I shall present have been drawn.

In any army the soldier's civilian background is influential in determining his adaptability to military life. The Soviet youth's introduction to military matters begins while he is still a civilian—all male students receive classroom military instruction and summer camp training during their final three years of secondary schooling. Preinduction training for youths in rural areas is less formal and less extensive. In such areas, officers and noncommissioned officers from local reserve units conduct the training, which includes drill, military courtesy, weapons, chemical warfare and physical education.

All males are required to register at their local community in January and February after their eighteenth birthday. The selectees, based upon fulfillment of armed forces and civilian industrial requirements, are called up in September and October of the year in which they register. These selectees are referred to as a "class," the numerical designation of which indicates the year of their birth. For example, the class of 1940 would normally be called up in September-October 1959.

The recruit's active service, normally a three-year tour, begins with two months in "quarantine" training, which is similar to the eight weeks' basic training in the United States Army. Upon completion of quarantine training the recruit is assigned directly to a tactical unit, which may be one of the many army units in the satellite countries.



Transportation is reminiscent of "forty-and-eight" cars . . .

Transportation to the new station is very simple—a railroad freight car fitted with metal frames to provide slat-like bunks. Enroute, this train will periodically halt at isolated stops where the troops get out for meals. Transportation is reminiscent of the "forty-and-eight" cars of World War I. The train ride over, soldiers are trucked, often at night, to their new unit.

Once in his new unit, the recruit

The recruit is conspicuous . . .

is initially made conspicuous by his closely shaven head. His uniforms are simple, practical, and apparently few in number, judging from their often dirty appearance. The winter service uniform consists of an olive-drab pullover tunic with standing collar, matching breeches, and a long, heavy greatcoat or quilted cotton jacket. The greatcoat doubles as a blanket and in the field is worn in a roll across the chest. The summer service uniform is similar in style, only of coarse material. The familiar knee-length boots seem to be the only footgear known to the Soviet enlisted man. Rank and branch insignia are worn on shoulder boards; unit designations are never worn.

The Russian combat soldier, or *boyetz,* as he is called, contrary to the general impression and numerous caricatures of "Big Ivan," is not the massive, towering soldier often portrayed. Most Russian soldiers are of relatively small stature, about five feet six to five feet eight inches. However, this slight stature belies their physical abilities and endurance. Previous privations and physical hardship have prepared them well for the hard, demanding life of a soldier.

Like his American counterpart, the Red Army private is eager to complete his three years' service and return to civilian life. This is especially true of those thousands stationed outside Mother Russia. Duty in East Germany means virtual confinement to the Army installation with little opportunity for visiting adjacent towns or to take sight-seeing leave. His sight-seeing consists of a rare NCO guided tour to the local town or a bus tour to some Soviet memorial. Normally, he will only return to Russia upon completion of his duty tour. Even the Soviet officer who is afforded leave privileges must travel by train to Russia to spend his leave.

The Soviet soldier endures a Spartan life, and the daily routine of training and the drabness of casern life are interrupted only by meals, political classes and perhaps a stroll in the installation area before retiring to the squad room. From his early morning run in breeches and green T-shirt to the end of the day, the soldier's time is closely supervised and scheduled. All of his time is spent in the casern or close-in training areas except when the unit is conducting field exercises.

Apart from his rest period and political instruction, the entire day is devoted to developing a modern fighting soldier. A very minimum of manpower is utilized in barracks or area maintenance and this is evident from the general disrepair of the caserns. Police call may consist of several privates sweeping the walks with crudely made twig brooms. The Soviet commander is not concerned with appearance, providing the surrounding board fence is intact and keeps out curious eyes.

The *boyetz* of the mechanized rifle division, tank division or other combat arms, spends more time on military training, perhaps to his dismay, than his United States counterpart. In the close-in training areas, the soldier's discipline is sharpened with close-order drill and battle-drill exercises with much of the instruction given by junior officers and noncommissioned officers. Repetition and practical work typify this training. The men are accustomed to repeti-

Emphasis is placed on physical fitness.

tion, perhaps because of their previous regimentation in civil life.

Generally we think of all Soviet soldiers as being fully adapted and acclimated to the rigors of field life because of a peasant background. Naturally, some do have this background. However, population statistics indicate that in 1956 Russia's rural population was approximately 44 percent of the total, as compared to about 40 percent for the United States in 1958. Assuming a proportionate ratio of this rural populace enters the army in both countries, it appears that there is not an overwhelmingly larger number of men in the Red Army than in the U. S. Army who, because of their earlier environment, are better prepared to cope with the rigors of field life. It is therefore unwise to conclude—as is so generally done—that the Soviet soldier is necessarily superior to the American soldier in this respect.

It is true, however, that while the Soviet soldier may often have the same general background as his American counterpart, the Red is perhaps more practiced at endurance. He is not dismayed at being left to man a lonely traffic-direction post throughout an entire cold autumn night, with no more protection than a rain cape to cut the chill. An example of his acceptance of hardship and suffering is the soldier I observed who was helping extricate a mired car. A truck was taking up the slack in the chain attached to the car and the soldier's thumb, caught in the tow chain as the truck backed quickly off, was torn from his hand. With barely a murmur, he wrapped the bloody stub in a soiled rag, exclaimed, "Well, I've still got another!" and went on with his work. When I mentioned the need for medical aid, a Soviet officer told me not to worry. The man would be all right and besides his own stupidity had caused the accident.

It is this near immunity to pain and suffering which makes the *boyetz* a most dangerous adversary. Currently there is concern about the American soldier's will to go on fighting once he realizes he has been exposed to heavy radiation from a nuclear blast. In my opinion, the will of the Soviet warrior, stolid and stoical as he is, may be less affected.

He readily accepts hardship and suffering.

The Soviet soldier's normal suspicion of foreigners is particularly noticeable in a foreign land. Even information which is generally available through ordinary military channels is withheld whenever possible. I recall, for instance, passing through an East German city at a time when a British general was visiting a local Soviet installation. The spic-and-span turnout of the military policemen on traffic duty—they were often shabbily dressed—was the clue that something unusual was in the air. I asked one of them what the occasion was. "Vsyo v poryadket," he said, roughly, "Everything is OK," in effect—"Mind your own business." On my way back to West Germany I ran smack into the middle of a Soviet honor guard, and learned to my amusement that all the secrecy was over a matter of common knowledge—the general's visit.

Yet, if convinced that you are only interested in casual conversation, the Soviet soldier was often glad to discuss Sputnik, home and the weather, in that order. One night I lost my way while driving in East Germany and was stopped by two Soviet road guards. They were polite, but very firm in insisting that I wait for the arrival of the officer of the guard before continuing. As it turned out, I spent an hour with them. They began by asking me for cigarettes, which took me completely aback, for the Soviet soldier generally steadfastly refused to accept any friendly offering of the kind. Since the evening was clear and bright, our conversation naturally turned to their recently launched Sputnik. I asked them if they had been watching for it, and they said that they did not expect to be able to see it, but nevertheless they were thoroughly convinced that

not only was it up there, but that it was better than anything that we might try to put up to match it.

This is typical of the Russian soldier's attitude. The past glories and present strength of the Soviet Army have been vividly impressed upon him. He speaks of Russian missile and nuclear accomplishments in glowing terms. He has been trained in the latest techniques of chemical warfare, amphibious operations and radio communication. He has seen the extensive columns of Soviet trucks and armor, and is certain no other country possesses such power.

Perhaps the Soviet soldier's greatest achievement within the past ten years is his mastery of machinery. A tremendous training program has been required to obtain the necessary numbers of drivers and maintenance crews to support the present mechanized, motorized Red Army. It was not unusual to see columns of three or four trucks, filled with student drivers, negotiating narrow streets all day long and steadily through the night. I remember once, when I happened to be directly behind one of these convoys, the students awaiting their turns in the rear of the truck became more absorbed in me than in maintaining their balance. Their truck stopped suddenly and, of course, many of them fell to the floor. There were obvious signs of embarrassment among them.

Yet, despite somewhat whimsical methods, it appears that the Army has done well in training its motor personnel. It was quite normal to see a truck hood up with a driver perched over the motor, performing first-echelon maintenance, or to see mechanics "pull an engine" from a truck in the field.

At times it seemed that this new generation of Cossacks overestimated its prowess. An example is the young truck driver who, accustomed to crossing a river at a particular pontoon site, came highballing toward the bridge site at the head of a convoy, only to discover in the middle of the river that the pontoon bridge had been removed. He was not alone in his discomfiture, for several of the succeeding trucks followed him.

At times, this new generation of Cossacks goes a little "overboard" in estimating its own prowess.

This incident is not grounds for complacency about the Red soldier's ability to operate at night. His Army devotes considerable time and energy to all types of night training. Blackout convoy driving is stressed, and a unit of T54 tanks can wend its way through the twisting streets of a darkened East German town without more than nicking the confining brick walls. Throughout his training, the soldier is repeatedly drilled at night in tactics, range-firing, map reading, gun drill and many other fundamentals.

Although missiles, helicopters and other special weapons are fully employed in the Red Army, the individual personal equipment remains simple and not burdensome. The care taken of it would gladden the heart of any American supply sergeant and there is no need to list lost equipment in regimental bulletins—there is no lost equipment in the Red Army.

Though the Soviet soldier is slow to react in some situations, and is often lacking in initiative, I have seen him when he reacted rapidly in situations in the field. Furthermore, his field exercises are particularly realistic and I am convinced that he carries live ammunition at all times. For instance, one night I approached a lone soldier at a wireless set. I found him asleep, however, and returned to my car. As I did so, another soldier came into view, this one brandishing a rifle as he ran up the road toward me. Wishing to avoid detention while he sent for one of his officers, I jumped in and prepared to drive off. As I did so, he snapped off a shot at me and the bullet struck the ground near my car. Nor is this the only incident of Soviets' firing at our vehicles when taken by surprise. I, myself, was fired at on another occasion

when I was driving past a group of Soviet soldiers on maneuvers.

Like any soldier alone, without supervision, the Soviet will goof off. The sleeping communication man is a case in point. Another is the motorcycle soldier I found asleep in his side-car. I had stopped to see if there had been an accident, but, finding him asleep, I went on my way, wondering if somewhere some Soviet commander was impatiently awaiting an important dispatch.

In a group, however, the *boyetz* is likely to react aggressively, even without supervision. I had drawn off the road for coffee, once, by mistake pulling into what appeared to be a Soviet night bivouac. Before I could turn the car around, I was surrounded by enlisted men. In spite of my explanations, they insisted that I stop the motor and get out of the car; I refused, agai: wishing to avoid delay. When I began to pull away, they took hold of whatever was handy—knobs, bumpers, and so forth—and attempted to restrain me by force. In the course of the ensuing struggle, some of them began beating on the car, breaking windows and denting the body. The soldiers were no match for my engine, of course, but as I began breaking away their parting shot was to throw a blanket over my windshield in an attempt to destroy my vision. The blanket fell away, and I drove on leaving behind two windshield wipers and a thoroughly incensed group of soldiers. At no time was there an officer in evidence during this incident. The initiative was the soldiers' own.

The Red soldier is thoroughly indoctrinated. The gaps left by harangu ing political officers are filled around the clock by Radio Volga, the counterpart of Armed Forces Network. Despite this political conditioning, his natural curiosity often causes him to crowd around an American car, questioning the occupants about horsepower, speed and gas mileage in frank admiration. This attitude is most often observed in the field soldier, and very seldom in garrison troops. Delays and

The Soviet soldier's greatest achievement within the past ten years is his mastery of machinery.

irksome questionings being a common occurrence, I was used to detention. However, time and again I could sit not fifteen feet from a garrison guard without being able to strike up a conversation.

The Red Army soldier is a severely disciplined and thoroughly trained field fighter. It is unwise to underestimate him. On the other hand, he has his human side as well. He is capable of great endurance, yet at times is grossly unimaginative. Alone, he may have little initiative, yet in a group he is capable of decisiveness and responds well to leadership. Ordinarily, he is suspicious, but caught off his guard, friendly and even gregarious. He is convinced of his superiority and has great confidence in his equipment, yet his training methods are repetitious and he learns by rote.

In the last five years, the number of defections from the Soviet Army has diminished considerably. This may be because of greater security, or on the other hand, because there are fewer reasons to defect. Conditions in Russia are improving every year, and the tyranny has been somewhat relaxed. Consequently, Ivan has become more reliable, and more honestly concerned with professional soldiering.

Despite the manifold differences of his character, he is not so different from his counterpart in the United States Army. He is no hero, but he is also no simple-minded peasant. With his modern weapons and with proper leadership, he is an aggressive and formidable combat soldier.

The opinions expressed in this article are those of the author and do not necessarily reflect official thinking of the Infantry School.

IRAN
Bridge to the Middle East

On the jigsaw-puzzle map of the world certain terrain has key importance . . . .

by Capt Davis Burnett, Jr.

THE AREA between the Caspian and Black Seas has been known historically as the "bridge" to the Middle East. Strategic planners have long regarded this "land-bridge" as a critical terrain feature and a vital avenue of approach to oil-rich Kuweit or the Suez Canal.

To the Infantryman, whose critical terrain and avenues of approach generally center around the next hill—or the next town—it may be difficult to visualize how a "land-bridge" falls in this category.

But it does—and as you look at a map of the Middle East, the importance of Iran, and specifically its Azerbaijan Province, becomes more apparent. This small segment, Azerbaijan, is probably the most critical span in the entire "bridge." Azerbaijan is also one of the most critical areas in the defensive rampart which stretches from the Caspian Sea, westward through Iran and Turkey, to the Black Sea.

To gain a full appreciation of the country, however, more than a map study is required. The following description of Azerbaijan is a soldier's view of the terrain, people and climate of a typical Iranian province. Through this view, it is hoped that a greater understanding of the entire country, and, in fact, the entire area, may be derived.

The geography of this area will immediately remind soldiers of Korea. The Azerbaijan Province, which covers the northwest corner of Iran, has a great deal of mountainous terrain; unlike Korea, however, this rugged terrain is generally devoid of trees

and shrubbery. The high ground on the ridges and the mountain passes constitutes critical terrain in controlling movement through the area. To the Infantryman, this of course poses problems of concealment and mobility.

In the valley areas, on the other hand, the cross-country trafficability is generally good. The majority of roads in Northwest Iran are of improved gravel structure and will afford full use of mechanized or tank forces year round. Primary roads of macadam or concrete are almost nonexistent except in large cities.

The bridges in Azerbaijan run the gamut from modern railway types to ancient structures. However, because of the limited waterways in the area, bridges are generally not of critical importance. The typical river is shallow and readily fordable. Dry stream beds (wadis) form obstacles only where adjacent terrain has a steep gradient.

Population centers consist primarily of small villages which checkerboard the entire area. The distance between villages is not extensive and they are always located near a good well or water source. As a rule, the village is also the center of agricultural activity such as threshing, milling and storage of crops. Houses are constructed of mud and the walls are from 12 to 24 inches thick. It is worthy of note that some five million Azerbaijani live in these small centers of population.

While the preponderance of people are nomads or live in small villages, some half million people live in large population centers such as Tabriz (the capital of Azerbaijan Province), Rezaieh, Ardebil and Khoy. In the cities, thick mud walls often surround individual property. These mud walls, most of which are approximately two feet thick, are a carryover from ancient times. Streets in these cities are quite narrow and are generally devoid of vehicular traffic.

The land in the valleys is very fertile. Widely cultivated Azerbaijan is the agricultural center of Iran and grows approximately two thirds of the crops produced. These crops include wheat, rice, rye, barley and almost all types of fruit. The grape vineyards produce an excellent wine and raisin crop. Agricultural techniques are primitive and full use is made of wooden plows and water buffaloes. To the soldier, this abundance of palatable, nourishing foodstuffs is of significance since, if need be, he can literally "live off the land." Water and milk are not potable by our standards, however.

The people of Azerbaijan are typical of Iran and represent a mixture of

Rugged terrain (above), generally devoid of trees and shrubbery, is typical of Azerbaijan Province.

Bridges run the gamut from ancient to modern, but most rivers (above) are shallow and fordable. In cities (below) thick mud walls generally surround individual property.

many nationalities including Kurds, Armenians, Turks, and Persians. They are friendly, curious and talkative. The villager, city-dweller and the nomadic tribesman are all fiercely patriotic toward their tribe or clan and the Iranian Crown.

In view of the Iranians' fierce patriotism and hardy makeup, the individual makes an excellent soldier. A compulsory military program is in effect and all able men serve in the armed forces. Many Iranian officers have attended United States Army Service Schools.

The nomads are an interesting and significant element of this area. These people live in temporary tent cities and "follow the grass." The nomads use camels as a principal means of transport and have large herds of sheep and goats which graze on the fertile Azerbaijan land.

The climate in Azerbaijan and, in fact, in most of Iran, parallels that found in mountainous areas of the Southwest United States. Weather ranges from mild cold and snow in the winter to a pleasant, warm climate in the summer. Extremes in temperature are the exception and the climate is generally pleasant.

In summing up this brief description of Azerbaijan, it is important to remember that, while it is typical of Iran, it does have some unique aspects. Because of its size (about the same as the state of Ohio) and its critical location on an avenue of approach to Kuweit or the Suez Canal, Azerbaijan aptly fits the description of a critical terrain feature.

Azerbaijan (and, in fact, all of Iran) is indeed a vital span in the "bridge" to the Middle East.

For further information on Iran, readers might be interested in the following books:

The United States, Turkey, and Iran
by Lewis V. Thomas and Richard N. Frye

Mission for Peace: Point 4 in Iran
by William E. Warne

Iran
by Herbert H. Vreeland

Iran, Past and Present
by Donald N. Wilber

The opinions expressed in this article are those of the author and do not necessarily reflect official thinking of the Infantry School.

The Iranian makes an excellent soldier.

Nomads live in tent cities.

Small villages "checkerboard" the landscape.

CAPT DAVIS BURNETT, JR. completed OCS in 1946. After graduation he was assigned to the Antitank Company, 350th Infantry, in Italy. Following a two-year break in service, he served at Fort Ord, and in Korea where he was a KMAG advisor to the 7th ROK Division. Captain Burnett subsequently served in the G3 Section, 2d Infantry Division, and in the Information Section, 4th Infantry Division. In 1955-56 he was an advisor to the Imperial Army of Iran. He completed the Infantry Advanced Course in 1959, and is currently assigned to the Department of Non-Resident Instruction, USAIS.

The nine principles of war are simple, universal and enduring. Personalities, on the other hand, are complex, unique and transitory. The history of war is the product of the recurrent mixture of these two ingredients—principles and personalities—in the iron hopper of combat.

Let us then relate a principle of war to distinct personalities . . . a time . . . and a place. The objective is not to stress either principles or personalities —or the worth of military history as a cultural or professional vehicle. Rather, it is to recount the decisive role of human intellect, will and character in war as an expression of faith in the ultimate value of military leadership as a source of national power.

Masterpiece of Maneuver

CHANCELLORSVILLE

by Lt Col William F. Long, Jr.

AFTER Burnside had slaughtered his (own) thousands in the "battle without a plan" at Fredericksburg in December of '62, history was to record the battle of Chancellorsville—the Masterpiece of Maneuver. Here, with Union forces outnumbering him more than two to one, Lee outmaneuvered his foe in a manner which not only saved his army from destruction but which gained him victory in the battle.

At Chancellorsville "Fightin' Joe" Hooker, Burnside's critical, former (in) subordinate, proved that he could—and did—plan. He would send Stoneman with the reorganized and strong Federal Cavalry Corps on a wide, deep, circular sweep cutting off Lee from Richmond and supplies (Note 1, figure 1). He would hold Lee's army in position with deception by two corps under Sedgwick (Note 2, figure 1). Then, making a bold turning maneuver, he would come in on Lee's rear (Note 3, figure 1) and pinch him—to death.

The plan was well timed. Lee subsequently dispatched 20,000 men under Longstreet to march to Suffolk to cover the Federal threat to Richmond. As a result, Lee's Army of Northern Virginia, now numbering less than 70,000, was left to face Hooker with his 130,000 victory-hungry Yanks.

The plan and maneuver worked—to a point. How this point was reached is discussed in the play-by-play description which follows:
(Parenthesized numbers refer to map, figure 2)

At the start, Stoneman, delayed by high water, dissipated his strength in

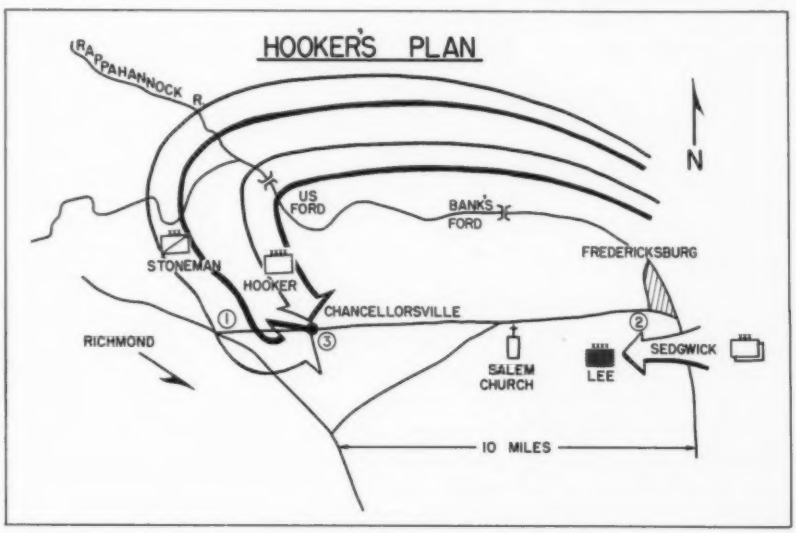


Figure 1. "Fightin' Joe" could—and did—plan . . .

a series of independent raids (4) and did not return until the battle was over. The result was little trouble for Lee and little cavalry reconnaissance for Hooker. Sedgwick demonstrated effectively (5) and Hooker gained two precious days (29 and 30 April) before Lee saw the picture. Hooker's maneuver was going according to plan—discounting Stoneman's raids. Arriving at Chancellorsville on 30 April, Hooker wasted an invaluable night announcing success. Then he really dropped the ball.

In executing the plan, Hooker moved too slowly, failing to break into the open. Further, when his leading units hit Lee's hurriedly positioned advance guard (6) on 1 May, Hooker ordered a withdrawal to Chancellorsville. Here he dug in rather than continue the offensive which, with his superiority in numbers, would surely have brought him victory. And this was the turning point.

Early was left by Lee to contain Sedgwick, who did not press until 3 May and was then stopped at Salem Church (7). Meanwhile, Lee had approved Jackson's bold plan of maneuver which was to split Lee's already outnumbered army into its fourth segment. To implement this plan, on 2 May, Lee (with 15,000 men) held Hooker in position (8) while Jackson (with 35,000 men) moved in a wide turning movement to smash into Hooker's right rear at 1800 hours (9). Only darkness prevented the ruin of Hooker's Army of the Potomac. The next day he was forced back to a second line under heavy pressure.

Lee then contained Hooker's 60,000 troops with less than 20,000 Confederates while he moved (Note 10, figure 3) against Sedgwick, who had been closing in on his rear. Sedgwick was driven from the Salem Church area and realized just in time that he was facing the bulk of Lee's army. Sedgwick then promptly withdrew north of the Rappahannock by way of Bank's Ford (11).

Lee then turned around (12) and

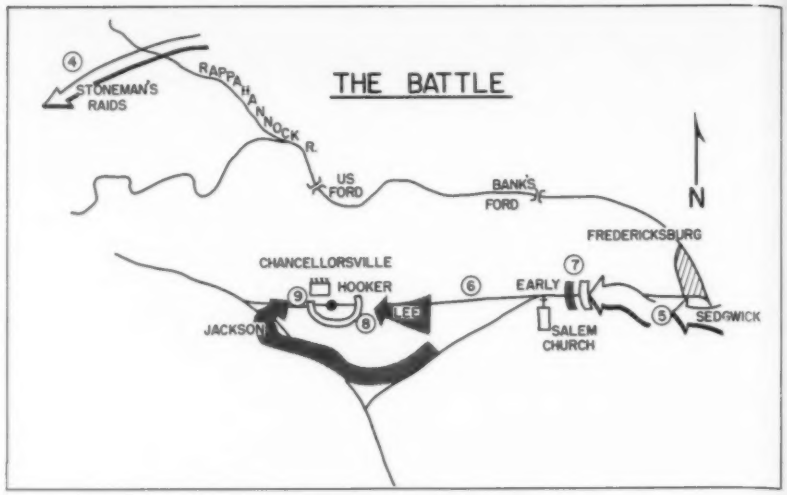


Figure 2. . . . but the execution of the plan . . .

maneuvered for a final blow against Hooker. But on 6 May, "Fightin' Joe" had also withdrawn to the north side of the Rappahannock (13) and the battle was over. A remarkable series of maneuvers had permitted Lee to continually concentrate superior combat power at the point of decision in spite of his two-to-one inferiority in troops.

Admittedly, Hooker's maneuver accomplished its purpose. Lee was turned out of his strong Fredericksburg positions. By maneuver Hooker gained both strategic initiative and surprise. And yet, in the final analysis, Hooker lost this decisive battle.

Although "Fightin' Joe" had no lack of physical courage — as he proved before and after this campaign —his fault lay in his own personality. He lacked the moral courage and the intellectual discipline to reap the benefits of his plan. For this he must bear the full responsibility. At the critical time when every effort and all moral force should have been exerted to carry the maneuver and plan to success, Hooker abandoned his plan for no reason. He sacrificed his advantages of strength and initiative and became the victim, rather than the hero, of the battle. He did not visualize aggressive victory. Instead of finishing Lee's army when he had the chance, Hooker returned to close terrain, established a strong position and waited for the retreat of the out-

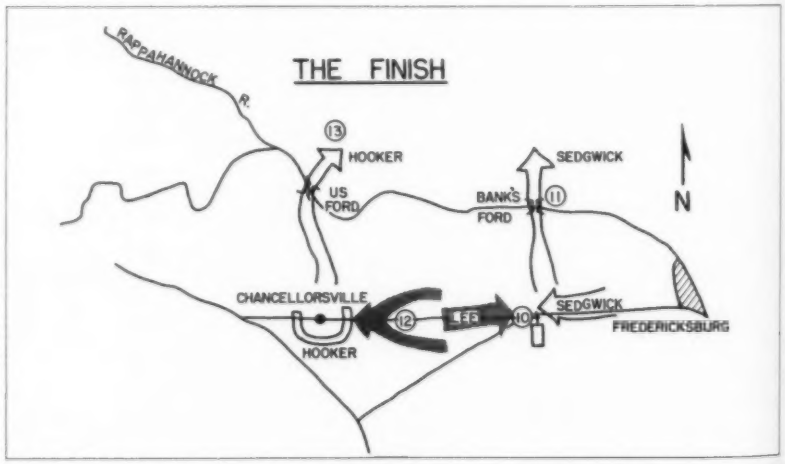


Figure 3. . . . failed for a lack of moral courage and intellectual discipline.

LT COL WILLIAM F. LONG, JR. a 1942 OCS graduate, served in China during World War II. During the Korean War he served as a battalion S3 and later as regimental S3 of the 7th Infantry Regiment. Colonel Long subsequently served as a battalion commander and as regimental S3 of the 12th Infantry Regiment in Germany. Additionally, he has served as an instructor at USAIS, as assistant G1, Seventh U.S. Army, and as assistant G3, Second U.S. Army. Colonel Long received his B.A. from Otterbein College and has completed Military Intelligence School (Yale University), the Airborne Course, Associate Infantry Advanced Course and the Associate Course, Command and General Staff College. Colonel Long was recently promoted on the "outstanding" list and is currently attending the Armed Forces Staff College.

maneuvered enemy. Maneuver set the stage for Hooker, but he was upstaged by a couple of scene-stealers.

Jeb Stuart furnished the information and screened the maneuver for Lee. Jackson furnished the plan and the drive. Lee provided the moral force by approving further separation of his already outnumbered segments. His maneuver was successful. Hooker was defeated—and almost trapped—and Sedgwick barely escaped destruction by a hasty retreat.

Chancellorsville, the masterpiece of maneuver, was finished. The personalities and the principle had been mixed in the hopper and the result was there for all to see. In addition to the lack of intellectual discipline, the golden quality of confidence was not in Hooker's personal arsenal. He demonstrated a lack of confidence in his cavalry, his subordinates, and ultimately, in his own plan and in himself. It was almost as though he could not really conceive victory and actually subconsciously forced his command into a posture inviting defeat. On the contrary, Lee's maneuvering inside Hooker's "trap" left little to be desired. Even after Jackson's mortal wound in the battle, Lee never failed to demonstrate confidence in himself, his commanders and his men by expecting that they would accomplish all that was planned for or demanded of them.

There is much to be learned from this view of the principle—and the personalities. The level of command requiring independent, decisive maneuver may very likely be much lower than the field army in the wars of the future. Regardless of the level, however, there is a clear requirement that the commander who desires to reap the benefits of the principle of maneuver must achieve a compatible personality. Courage, aggressiveness, imagination, intellectual discipline and intelligent self-confidence are among the necessities of a "maneuver" personality. A fortunate commander may possess these traits; all commanders should recognize and develop them in themselves and in their subordinates.

For without the magic ingredient of the "maneuver" personality, the principle is nothing more than an empty phrase in a book.

WE KNOW YOU'RE BUSY . . . BUT . . .

We also are "digging"—for new ideas of general interest to Infantrymen—So if you have an article that you think might have reader interest, send it on to us. Special proficiency in writing for publication isn't necessary—Infantry's *experienced staff of professional editors will cast what you have to say in a form suitable for printing.*

If you have any ideas on the following topic-titles (or, in fact, on any subject of interest to Infantry *readers), we'd be pleased to hear from you. Regular rates will, of course, be paid for any material you publish in* Infantry.

How to Inspect Battle Group Vehicles.
Technique of Training Drivers for Night Movement.
What You Should Know About Current Military Demolitions.
Operations of the Division Trains.
New Ambush and Roadblock Tactics.
Reverse Slope Defense on the Nuclear Battlefield.
Should We Change the Size of the Rifle Squad?
Organization and Tactics for a Separate Brigade.
How to Inspect a Company Supply Room.

YOUR INFANTRY CAREER

This department provides important information on policies and personnel actions which affect your Infantry career. Material for Regular Army and active duty Reserve officers is furnished by Infantry Branch of the Officers Assignment Division. Similar material for Infantry officers of the USAR is provided by the Army Reserve Branch of the Adjutant General's Office. Information for the enlisted Infantryman is obtained from other Department of the Army agencies.

From Infantry Branch

COMMAND DUTY IN TRAINING CENTERS

Infantry Branch has received many queries concerning the Department of the Army interpretation of "command duty" and the type assignments constituting this duty. The majority of the questions ask whether command of training center units is given consideration and credit equal to command of Infantry TOE and other tactical units. The direct answer is "yes."

It must be realized by Infantrymen that there are insufficient command slots in our combat units to provide each officer with this duty during his career. Therefore, Infantry Branch considers command of training center units in exactly the same light as command of tactical TOE units. From a professional viewpoint, command of training units provides certain challenges that can be more difficult and sensitive than those encountered in tactical units.

Along these lines, we all recognized the great need and importance of the Infantry Replacement Training Centers during World War II. The training situation at the present is no different than during 1941-45. Duty with training center units is as important as duty with tactical units. Duty with either one is an essential step in the career development of Infantry officers.

EDUCATION

Department of the Army is placing greater emphasis on civilian schooling in terms of professional development and self-improvement.

As outlined in AR 621-5, the minimum educational goal for officers is the attainment of a baccalaureate degree. Education provided by accredited civilian schools increases understanding and raises military performance potential. Additionally, the completion of college-level studies will contribute to the personnel quality and prestige objectives of the U.S. Army.

The response and interest of Infantry officers in the education program is very encouraging. Many applications and inquiries on civilian schooling are received daily by the Infantry Branch. The following information is intended to answer some of the more common queries and to provide general information which applies to most civil school situations.

CIVIL SCHOOLS PROGRAM (POSTGRADUATE)

AR 350-200 and AR 350-205 are the current regulations governing the Civil Schools Program. Applications may be submitted at any time through channels to The Adjutant General, Department of the Army, Attention: Infantry Branch. Courses usually begin in January, June and September of each year.

This program normally fulfills the Army's continuing requirements in the social science and physical science areas; however, applications from Infantry officers are especially needed in the fields of Nuclear Physics, Space Physics, Electronics and Guided Missiles. Officers who possess an undergraduate degree, have completed the Advanced Course and have an academic background which includes a good proficiency in mathematics (through calculus) and physics are encouraged to apply for selection in the physical science area. Applications for both physical and social sciences should list at least three desired areas of study in order to give the Infantry Branch greater flexibility in consideration for selection.

An application remains active until the officer: (1) is selected, (2) withdraws his application, (3) declines the training for which selected, or (4) is no longer eligible by virtue of age. This program is voluntary and selection is competitive based on a comparative evaluation of the military and undergraduate records of all applicants.

THE FINAL SEMESTER PLAN

The Final Semester Plan (Bootstrap), authorized by AR 621-5, offers assistance to all officers who desire to attain a baccalaureate or advanced degree. Selection for attendance is competitive based on a comparative evaluation of the records of all officers who apply. Competition is keen as the continual flood of applications places a premium on the limited number of spaces. Officers must insure that their applications reach the Department of the Army at least 120 days prior to desired date of attendance. Previous issues of *Infantry* have answered many basic questions regarding this program. However, Paragraph 11c, AR 621-5, should be carefully read by applicants and indorsing officers to assure compliance with all requirements so that unnecessary delays will not be incurred through application errors. The most common errors are:

1. Submission of a college worksheet evaluation of credits rather than an official college transcript.
2. Specific dates of attendance not stated in the college letter of acceptance. Alternate periods should be given to allow greater flexibility for selection.
3. Requesting a period of time in excess of the authorized semester or two quarters and a summer session.
4. Forwarding indorsements not indicating the applicant's availability date. (The availability date, desired date of attendance, and acceptance date from the college must be in agreement.)

A Bootstrap applicant selects his own field of study within the scope of the AR 350 series. Department of the Army does not differentiate in selection between the physical science and social science fields. Within the restrictions of available spaces and eligibility, all deserving applicants are given an opportunity to attain their degrees. However, military manner of performance is the main factor in the selection of officers for attendance on Bootstrap. Indorsing officers must insure that a true evaluation of the officer's capabilities and potential and availability date is given in the forwarding indorsement.

DON'T REST ON YOUR LAURELS

During World War II and Korea, many officers entered the service, thereby curtailing their college-level studies. Some of these officers established enviable records and have since been climbing the career ladder toward positions of highest service responsibility. Many of these extremely successful officers have perhaps overlooked the possibility of improving or completing their education with the feeling that their established records would continue to overshadow this lack of formal education.

In this age of technological development and keen competition, any gap in education is critical and as such is a definite consideration in the various selection processes. As an example, two records may be so similar as to be distinguishable only by the names and the possession or non-possession of a college degree.

The Army strongly encourages its officers to attain at least a baccalaureate degree. This encouragement is not just lip service, but includes financial assistance for off-duty studies. The Final Semester Plan, which does not provide tuition assistance, allows complete freedom from military duties on a full-pay status for those who can qualify and are selected. (See AR 621-5).

It has been fourteen years since VJ Day and six years since the Armistice in Korea. What was once a good reason for non-possession of a formal education is being gradually invalidated by time.

SPECIALIST PROGRAM

Several specialist programs are authorized by Department of the Army to furnish qualified and experienced commissioned officers for the specialized functions of the Army. The programs presently authorized are: Atomic Energy and Research and Development (AR 614-135), Foreign Area Specialist Training (AR 350-23), Information (AR 614-140), Civil Affairs (AR 616-170), Logistics (AR 614-132), Intelligence (SR 606-150-30), and Army Security Agency (AR 614-137).

The Foreign Area Specialist Training program is being expanded both in number and scope. New areas recently added are Brazil, Colombia and Vietnam. Additional areas in South America and the Far East are expected to open in the near future.

Officers who have an interest and desire to participate in these programs may apply under the appropriate regulation to The Adjutant General, Department of the Army, Attention: Infantry Branch. Officers selected to participate in these programs are considered equally with their contemporaries for military schooling and promotion.

ARMY AVIATION

Officers up to and including the rank of lieutenant colonel may apply for Army Aviation Training under

the provisions of AR 611-110. Like other schools for which the number of applicants exceeds the number of available spaces, selection for aviation training is competitive. In addition to normal quotas for lieutenants, Infantry Branch has received a limited number of quotas for majors and lieutenant colonels.

Army Aviators and Aviation applicants who have not already studied the new AR 600-105, 21 August 1959, which outlines the Army Aviation Officer Career Program, are strongly encouraged to do so. Officers accepted for Army Aviation before they complete two years of branch duty must complete this duty within their first six years of service. In the grade of captain and above, aviators can expect career branch duty of up to 36 months in each grade.

Aviators are eligible to participate in the Civil School Program in areas which complement their aviation specialization, such as aeronautical engineering and electronics. Fields necessary for branch career progression are also open to Army Aviators.

THE MARK OF A MAN

Prestige and accomplishment are items of great importance to all officers. Many senior officers have established themselves professionally only after years of military experience and achievement. Today, young Infantry officers have a wonderful opportunity to enhance their professional status by earning the right to wear the Expert Infantryman Badge.

Soldiers, especially Infantrymen, are intimately aware of the meaning of this badge and know full well that the wearer is particularly qualified for combat and is truly adept in Infantry skills and techniques. They also know that earning the privilege to wear it was not easy, and that it came after one of the most grueling and exacting mental and physical tests in the Army today.

There is perhaps no quicker and better way for a young officer to establish himself than through earning the right to wear the Expert Infantryman Badge. As stated by General Bruce C. Clarke, "It is truly the mark of a man."

AIRBORNE AND RANGER TRAINING

Airborne and Ranger Courses provide a real challenge and an outstanding opportunity to join an elite, all-volunteer corps of confident, aggressive officers highly qualified in their profession.

The four-week Airborne Course conducted at the U. S. Army Infantry School is available to officers satisfying the prerequisites outlined in AR 611-7. In addition to the jump training, the course includes instruction in the characteristics, capabilities and techniques of air transportability and aerial delivery.

The longer Ranger Course provides nine weeks of training conducted in three phases. The initial phase is a refresher in Infantry tactics and techniques necessary to complete the balance of the course. This phase also serves to improve the student's physical condition in preparation for the arduous training at the jungle and mountain training camps during the second and third phases. In addition to achieving a minimum score of 225 points in the standard physical fitness test, applicants must be able to swim at least fifty feet to be eligible for Ranger training.

Constant emphasis is given during both courses to development and refinement of leadership abilities and soldierly qualities. Completion of these courses by junior officers provides a firm and sound basis for further professional development.

LANGUAGE TRAINING

The nature of many overseas assignments has placed additional emphasis on language training. Infantry officers should do their utmost to acquire or increase proficiency in languages through the educational facilities provided at their stations.

The Army Language School at Monterey, California, provides a large share of the training for officers whose anticipated assignment requires an ability to speak a foreign language. While selected officers are normally ordered to language training just prior to an overseas assignment, applications may be submitted at any time under the provisions of AR 350-24. The language courses offered are listed in DA Pamphlet 20-21 and in Department of Army circulars. Selection is competitive and is based on military performance and needs of the service. It is anticipated that AR 350-24 will be changed in the near future to establish proficiency in a foreign language as a goal for all career officers and to allow further training for those who already possess a proficiency in a foreign language.

THE SENIOR SERVICE COLLEGES

The term "senior service colleges" includes the following U.S. and foreign military schools:

The National War College
The Industrial College of the Armed Forces
The U.S. Army War College
The U.S. Navy War College
The Air War College
The (British) Imperial Defence College
The (Canadian) National Defence College
French Ecole Superieure De Guerre

Consideration of all officers within zones of consideration is automatic and applications are not required. (Eligibility criteria was outlined in "Your Infantry Career" in the April-June 1959 issue of *Infantry.)*

Selections for attendance at the senior service colleges are made by the Department of the Army Senior Service College Selection Board which usually meets in October of each year. The membership of this board includes a general officer as chairman, three colonels representing the combat arms, three colonels representing the technical services, one colonel representing the administrative services and a non-voting recorder.

The board carefully develops an overall order of merit

list. From this list the board selects about 270 officers to attend the various colleges in the numbers required to fill the quotas allocated to the Department of the Army. The board selections are made on the basis of sending only the "best of the best" to the appropriate senior service college. There are no directed branch quotas or allocations, other than the "branch minimums" which guarantee each branch at least the minimum number of War College graduates considered necessary to meet its requirements.

The board takes about a month to complete its selections. The list approved by the Chief of Staff is usually announced around Christmas of each year.

FOREIGN AND SISTER SERVICE SCHOOLS

Each year a limited number of Infantry officers are selected to attend foreign and sister service schools.

Officers selected can be rightfully proud, as selections are based on factors and qualifications above and beyond the normal competitive selection criteria. The fact that an officer is specially selected to represent the Infantry and the United States Army is indicative of the confidence placed in the officer by the Chief of Infantry Branch and the Department of the Army.

Attendance at foreign and sister service schools usually gives credit for the equivalent U.S. Army school. Additionally, officers broaden their professional knowledge of our sister services and allies thereby opening the way for challenging and interesting future assignments.

Officers desiring to be considered for attendance at any specific foreign or sister service schools are encouraged to write the Infantry Branch, Attention: Education Section, outlining any special qualifications.

Infantry Branch receives quotas, some yearly and others periodically, for the following schools:

Air University, Air War College
Air University, Command and Staff
Australian Army Staff College
British Imperial Defence College
British Staff College
Canadian Army Staff College
Canadian National Defence College
French Ecole d'Etat Major
French Ecole Superieure De Guerre
German Army Staff College
Indian Defense Services Staff College
Italian War College (1st and 2d Year Course)
Marine Corps School—Senior Course
Marine Corps School—Junior Course
Naval War College Command and Staff Course
Naval War College
Pakistan Command and Staff College
Spanish Escuela Superior de Ejercito
United Kingdom Joint Service Staff College
Uruguayan General Staff School
NATO Defense College
Armor Officer Advanced Course

OVERSEAS DUTY WITH MAAGs AND MISSIONS

Additional emphasis has been placed by the Chief of Infantry on the careful selection of officers for assignment to the many MAAGs and Missions throughout the world.

As official representatives of the United States Government, officers on this duty are in a unique position to influence foreign attitudes toward our country in either a positive or negative way. Each officer is an ambassador and must do all within his capability to insure that the U.S. is properly represented.

Infantry Branch considers MAAG and Mission duty a very necessary and important step in career development. An officer assigned this duty should make the most of the opportunity to improve himself professionally and to assist our allies in the development of their armed forces.

ARMY SERVICE SCHOOLS

Included in DA Pamphlet 20-21, *The Army School Catalog,* are many schools that are attended by Infantry officers on a TDY basis.

Officers may be ordered on TDY from their unit, using locally available funds and a unit quota, and return to the unit following completion of the training. Alternatively, officers may attend these courses on TDY in conjunction with permanent change of station orders using Department of the Army funds and quotas.

For economy reasons, intra-CONUS transfers have been sharply curtailed. Opportunities to attend school on DA orders are limited to those involving transfer to or from overseas stations. This increases the importance of taking full advantage of unit quotas for Army service schools while you are stationed in the CONUS. Particularly important for eligible officers is attendance at the Associate Infantry Officer Advanced Course.

DA Pamphlet 20-21 outlines the prerequisites and qualifications for attendance at specific courses.

CONCLUSION

An officer's education, like the other elements of his career development, is a matter of serious and continuing attention by Infantry Branch. Although the Branch has made real progress in its approach to an officer's needs, all the planning, programming and monitoring done by us cannot replace—and is not intended to substitute for—advance planning by individual officers.

It's never too early—nor too late—to plan for the future. Infantrymen should look ahead to determine where and how they can make their greatest contribution to the future Army. They should map out a program of self-improvement which will broaden their knowledge and develop their growth potential so that they and the Army can realize the full measure of their capabilities.

ENLISTED CAREER INFORMATION

A new AR, 614-212 (effective 1 February, 1960), is being implemented by Department of the Army. This

regulation prescribes procedures for nominating and selecting enlisted personnel for duty with military missions, military assistance advisory groups, international headquarters and joint headquarters. Policies and procedures announced in the regulations make available to more personnel the opportunity to serve in these interesting and highly important headquarters.

The new AR lists prerequisites for assignment to these missions, groups or headquarters. Generally the qualifying requirements are more liberal than those contained in former regulations. The minimum age limit has been reduced from 23 to 21 years. Although only personnel in grades E4 or higher will normally be selected for such duty, the minimum eligible grade stated in the new regulations is E2. Provisions are also included for personnel undergoing advanced individual training to volunteer for duty in one of the diversified-type positions open. Additionally, personnel now serving overseas may apply. Applications from personnel now overseas will be held by the Department of the Army until such time as the individual is eligible for assignment. This eligibility normally commences at the end of the normal tour overseas then being served. Thus, the provisions for volunteers included in the new regulations are especially important to those individuals now overseas who are looking toward their next tour of duty.

Also new in the directive is the provision that all enlisted personnel who satisfactorily complete a tour with a mission, advisory group or international or joint headquarters are eligible for recurring assignment to a similar-type duty. Conversely, recognizing the need for rotation between short-and long-tour areas, even for individuals having consecutive assignments to specialized duty of this nature, the regulations provide for alternating assignments to short-and long-tour areas.

Successful applicants for duty of the type described in the regulations must possess high professional (including, in some instances, a language proficiency) and personal qualifications. The dependents who accompany selected personnel on these assignments are equally important as the incumbents. Families must meet foreign nationals both professionally and socially. Each member of the individual's family is a representative of the United States Government.

With 40 MAAGs and missions, 10 international, and 7 joint headquarters, as well as one military school training foreign students, to be staffed world-wide, there are many requirements for qualified enlisted men and women. The new regulations list the oversea areas and types of activities for which individuals may apply.

There is always a requirement for top quality personnel in assignments of this nature. The enlisted personnel assigned to these world-wide installations enjoy certain privileges and associations, not normally available in routine assignments, which are both interesting and professionally broadening. Interested personnel are urged to investigate the assignment opportunities offered by the new regulations.

LETTERS *(Continued from page 3)*

The National War College . . .

Sir:

The National War College has selected the following item for required reading in support of one day's study topic as one of a number of items to be used in a five-weeks course beginning 10 December:

"The Soviet Officer Corps," by Maj Philip S. Grant from *Infantry*, Jul-Sept 1959, P.42-47. . . .

F. E. FITZGERALD
Faculty Service Consultant
The National War College
Washington 25, D. C.

And the US Army Aviation School

Sir:

We read with interest your Pro-Con articles on the subject of a separate branch for Army Aviation (Oct-Nov 1959 *Infantry*) and were quite interested in the viewpoints of both Captain Mickel and Captain Pezzelle. Such thought-provoking articles arouse considerable discussion and are of interest to everyone throughout the aviation program.

We would like to reprint these articles if possible in the *U. S. Army Aviation Digest*. . . .

THOMAS J. SABISTON
Lt Col, CE
Director, Dept of P&NRI
US Army Aviation School
Fort Rucker, Alabama

Complaints

Sir:

I am very sorry that I sent you a nasty letter . . . about not sending my *Infantry* magazine. . . .

The day after I sent the letter to you, my wife showed me the *Infantry* magazine that I said was never sent. I am so eager to read *Infantry* that I read it from cover to cover in one night. I do enjoy reading this fine magazine.

NAME WITHHELD

We're happy to get mail—critical or complimentary. If Infantry *isn't arriving as it should be, we want to know about it. And as a suggestion to subscribers bothered with the above problem, why not take out a separate subscription for the wife?*—Editor.

Claymore

Sir:

I enjoyed your December issue very much, especially the article on the Claymore weapon by Captain Robson. I have heard a great deal about this weapon in recent years, but this is the *first opportunity* that I have had to read the details on it. However, in the rigging of any explosive, provisions are necessary to prevent the blasting cap from falling or being pulled from the charge. No mention of this is made and I am sure that the article will be used as a basis for much *advance instruction.*

Ordinarily the solution lies in tying two half hitches around the charge with the firing wires. This solution may also work with the Claymore. . . .

This point may be a minor one, but at the short range at which this weapon is employed I feel that every precaution should be taken to assure detonation.

THOMAS G. BANKS
Major, Infantry
Ft. Bragg, N. C.

The Infantry School has found that the soft plastic of the explosive retains the blasting cap in its horizontal position. However, for added security, the user may place two half hitches around the body of the Claymore if he desires.—Editor.

SCHOOL LISTS

COMMAND and GENERAL STAFF COLLEGE (Regular Course) (60-61)

Abt, Frederick T.	Capt
Adams, Dwight L.	Capt
Adams, Walter E.	Major
Allen, John W., Jr.	Capt
Allen, Terry de la M.	Capt
Antrim, Ralph C., Jr.	Capt
Applin, Paul L., Jr.	Capt
Atkins, Jesse J.	Major
Baldwin, Daniel L.	Capt
Barnes, Wilman D.	Capt
Barrett, John C., Jr.	Major
Barringer, Fred A.	Capt
Bauer, Charles J.	Capt
Bauer, Eugene R.	Capt
Beard, Rutland D., Jr.	Capt
Big, Bernard	Major
Bishop, John H.	Capt
Black, John R.	Capt
Bolduc, Lucien E., Jr.	Major
Bullard, William P.	Capt
Bunn, Dudley T.	Capt
Callahan, Vincent J.	Capt
Campbell, Clarence P.	Capt
Carrell, Robert F.	Major
Carroll, Edward F.	Major
Carroll, James H., Jr.	Major
Carter, Leslie D., Jr.	Capt
Casner, Earl L.	Capt
Cavazos, Richard E.	Capt
Chitty, John H., Jr.	Major
Church, William M.	Capt
Cochran, James F.	Capt
Cole, William M.	Capt
Conn, Jack L.	Capt
Connolly, Richard J.	Capt
Cosper, Manley H., Jr.	Capt
Costa, John J.	Capt
Cottey, Robert J.	Capt
Couch, Roy E.	Capt
Cronin, William B.	Capt
Crowley, Edward F.	Major
Crutchley, Donald O.	Capt
Cummings, William J.	Capt
Curtis, James A.	Capt
Daoust, George A.	Major
Day, Stephen A.	Major
Detherow, Ralph H.	Capt
Dielens, August J., Jr.	Major
Doppel, Leroy	Major
Dougherty, Charles	Capt
Duggins, Frank H., Jr.	Capt
Dunn, Robert H.	Capt
Egg, Eugene C.	Capt
Elliott, Joe F.	Capt
Fell, Joseph G.	Capt
Forbes, William A.	Capt
Ford, John O.	Major
Gainok, Elmer J.	Capt
Gibson, Joseph T.	Capt
Gilbert, John M.	Capt
Gilbertson, Rodney B.	Capt
Gillig, Roy W.	Major
Goodnow, Chandler	Capt
Goodson, Allen M.	Capt
Grange, David E., Jr.	Capt
Gray, Harvey W., Jr.	Capt
Green, Charles E.	Capt
Griffith, Stephen M.	Capt
Gysin, Thomas W.	Capt
Haden, Clinton B.	Capt
Hanrahan, William P., Jr.	Capt
Harrison, Benjamin L.	Capt
Hassin, Donald J.	Capt
Hatch, Jay A.	Capt
Hay, Solomon L., Jr.	Capt
Hayward, Charles W.	Major
Healy, Michael D.	Capt
Henderson, John T.	Capt
Herigstad, Bert H.	Capt
Holcomb, James F.	Major
Howard, Eli P., Jr.	Capt
Humphrey, Harold W.	Major
Hurley, Robert D.	Capt
Hurst, Cam J.	Capt
Hurtt, Clarence M.	Major
Irons, James V.	Capt
Johnson, George M.	Capt
Jones, Murry G.	Major
Keebaugh, Harold G.	Capt
Keehn, Kent	Major
Keesling, Earl L.	Capt
Kennedy, Robert W.	Capt
Klie, George D.	Capt
Kone, Kenneth M.	Capt
Latham, Willard	Capt
Leslie, James M.	Capt
Levitt, David M.	Capt
Little, Selby F., Jr.	Capt
Livingston, Hoyt R.	Major
Looby, Robert W.	Capt
Lopez, Henry F.	Capt
Lynch, Robert O.	Capt
Lynch, Thomas B.	Capt
Mapp, James H.	Capt
Marine, George E.	Capt
Martin, James J.	Major
Martin, Norman L.	Major
Matte, Robert G.	Major
Mauderly, Allen J.	Major
McClure, Ardie E., Jr.	Capt
McIntosh, James C.	Capt
McMinn, John H.	Capt
Meighen, George A.	Capt
Meinzen, Walter E.	Capt
Melner, Sinclair L.	Capt
Meredith, David S., III	Capt
Merrill, Samuel J.	Capt
Meyer, Harold J.	Capt
Mickel, Woodburn J., Jr.	Capt
Middlemas, William B.	Capt
Milam, Ronald H.	Capt
Mittelstadt, Jack	Major
Montague, Jack H.	Major
Moore, Charles E.	Capt
Moore, Ernest W.	Capt
Moore, Harold L.	Capt
Moore, Harry L.	Major
Mundie, William L.	Capt
Neal, Harold	Major
Newell, Arthur	Capt
Noble, Thomas P.	Capt
Nottage, Paul E.	Major
Oblinger, Frank D., Jr.	Capt
O'Brien, Emmett J.	Capt
Ochis, Ronald F.	Capt
O'Mary, Paul R.	Capt
Parker, Brandon L.	Major
Petro, Peter P.	Capt
Pickett, Edward F.	Capt
Pieper, Frederick A.	Capt
Pierce, Walter R., Jr.	Capt
Plummer, Frank S., Jr.	Capt
Poe, James E.	Capt
Price, Alfred J.	Major
Price, James E.	Capt
Price, Marvin L.	Major
Rahmann, John C.	Capt
Ray, Charles G.	Major
Rettstatt, Karl T.	Capt
Riggs, William G.	Lt Col
Robinson, Neil	Major
Rock, Fairfield	Major
Rollier, Robert L.	Capt
Sanderson, Alfred L.	Capt
Schiller, William E.	Capt
Schnoor, Dean F.	Capt
Schofield, Frank C.	Capt
Schumacher, David J.	Capt
Setian, Zadig Y.	Capt
Shannon, Donald J.	Capt
Sharp, Daniel G.	Capt
Sheppe, Frank W.	Capt
Sibbles, Graham M.	Capt
Skoien, Clarence E.	Capt
Slominski, Martin J.	Capt
Smith, Roddy L.	Capt
Stark, Lloyd J.	Capt
Steele, Howard M., Jr.	Capt
Stone, Joel E.	Capt
Stough, Richard B.	Capt
Tamez, Rudolph M.	Capt
Tatum, John M., Jr.	Capt
Thomas, Grace G., Jr.	Capt
Uchima, Unkei	Capt
Viterna, Robert O.	Capt
Vollmer, John P.	Capt
Wahle, Charles G. F.	Capt
Walters, Vernon J.	Capt
Watson, Charles L.	Major
Wesolowski, Stanley	Capt
White, Ben O., Jr.	Capt
Whitney, Philip M., Jr.	Capt
Wickham, John A., Jr.	Major
Williams, Aylwyn D.	Capt
Williams, Walworth F.	Capt
Wilson, Calvin O.	Major
Withey, George L., Jr.	Major
Wood, Donald M.	Capt
Woolard, Reginald W.	Major
Yerks, Robert G.	Capt
Zastrow, Richard E.	Capt
Zollicoffer, Marion B.	Capt

COMMAND and GENERAL STAFF COLLEGE (Associate Course) (Jan-60)

Adams, Hobert D.	Major
Alkire, Dale V.	Capt
Armentrout, Carl D.	Lt Col
Avon, Robert	Capt
Baker, Harl W.	Capt
Bird, Eugene K.	Capt
Birkedahl, Leroy P.	Capt
Butler, David C.	Major
Byrnes, Laurence G.	Lt Col
Cary, Ranolph J.	Major
Chesebro, John S.	Lt Col
Church, Carl N.	Capt
Church, William V.	Lt Col
Clark, Max A.	Capt
Crabtree, Clarence	Major
Denham, William O.	Lt Col
DeVito, Louis J.	Capt
Donovan, Charles W.	Lt Col
Earley, Robert L.	Capt
Fawcett, Lawrence W.	Lt Col
Fitzpatrick, Edward E.	Capt
Foulk, Elden K.	Capt
Freakley, Edwin M.	Major
Gagliano, Charles G.	Capt
Greer, Charles F.	Major
Guevara, Roberto	Capt
Hackwood, Arthur W.	Lt Col
Henderly, Harold B.	Lt Col
Hennessee, Joe D.	Lt Col
Hiebert, Donald L.	Capt
Hillery, Arthur M., Jr.	Lt Col
Holland, Robert E.	Lt Col
Hunter, William R.	Lt Col
Ivie, Carl W., Jr.	Major
Jett, Richard O.	Major
Johnson, Stephen R.	Capt
Joplin, Troy M.	Capt
Kane, Francis B., Jr.	Major
Korver, Kenneth J.	Capt
Lyons, Robert L.	Capt
Magnuson, Ellert G.	Capt
McArthur, Francis S.	Major
McBride, George C.	Capt
McCarrell, Charles B.	Capt
McCluskey, Joseph E.	Major
McCord, Brunice H. K.	Capt
McIlwain, Walter N.	Capt
McKee, J. Edwin	Major
McNerney, N. D.	Capt
Meredith, Earl E.	Major
Merrick, Thomas L.	Major
Mijal, Karol P., Jr.	Capt
Miles, James S.	Major
Mills, Marion E.	Major
Monroe, Putnam	Major
Moore, Don W.	Capt
Morrison, George R.	Capt
Morrison, Homer W.	Capt
Nechey, Walter F.	Lt Col
Nicholson, Harry L.	Capt
Norwood, Roger M.	Lt Col
Obermeyer, Charles R.	Lt Col
O'Quinn, William A.	Major
Otis, Allen M.	Lt Col
Pahl, Irving C.	Lt Col
Parker, Harold	Major
Parker, Herbert G.	Capt
Patrick, John W., Jr.	Major
Pezzelle, Roger M.	Capt
Prather, Eugene C.	Lt Col
Prescott, Daniel C.	Major
Proctor, William D.	Major
Rakas, Albert S.	Capt
Rhotenberry, R. M.	Capt
Rios, Edwin T.	Lt Col
Roberts, Earl D., Jr.	Major
Robertson, James M.	Major
Robinson, Wayne	Capt
Rockwood, Charles A.	Major
Salem, Fred T.	Major
Schaffer, Donald C.	Major
Sites, Claude W.	Capt
Smith, Erskine	Major
St. Lawrence, Thomas J.	Capt
Talsma, Martin L.	Capt
Tyndall, Robert D.	Capt
Waldie, James R.	Lt Col
Walsh, Richard P.	Capt
Watson, James R.	Capt
Westling, Frank S.	Capt

SISTER SCHOOLS

MARINE CORPS SCHOOL (Senior Course)

Berry, Sidney B., Jr.	Lt Col
Kerr, Richard L.	Lt Col

NAVAL WAR COLLEGE (C&S Course)

Nairn, William W., III	Major

AIR UNIVERSITY (C&S Course)

Clemons, Joseph G.	Capt
Hemphill, John A.	Capt
MacDonald, Hugh A.	Major

FOREIGN SCHOOLS

BRITISH STAFF COLLEGE

Bradley, William J., Jr.	Capt

FRENCH ECOLE D'ETAT MAJOR

Stampley, Charles D.	Capt

GERMAN ARMY STAFF OFFICER COURSE (non CGSC)

Ball, George L.	Capt

INDIAN STAFF COLLEGE

Mastoris, William, Jr.	Capt

by Capt Ferdinand Q. Epps, Jr.

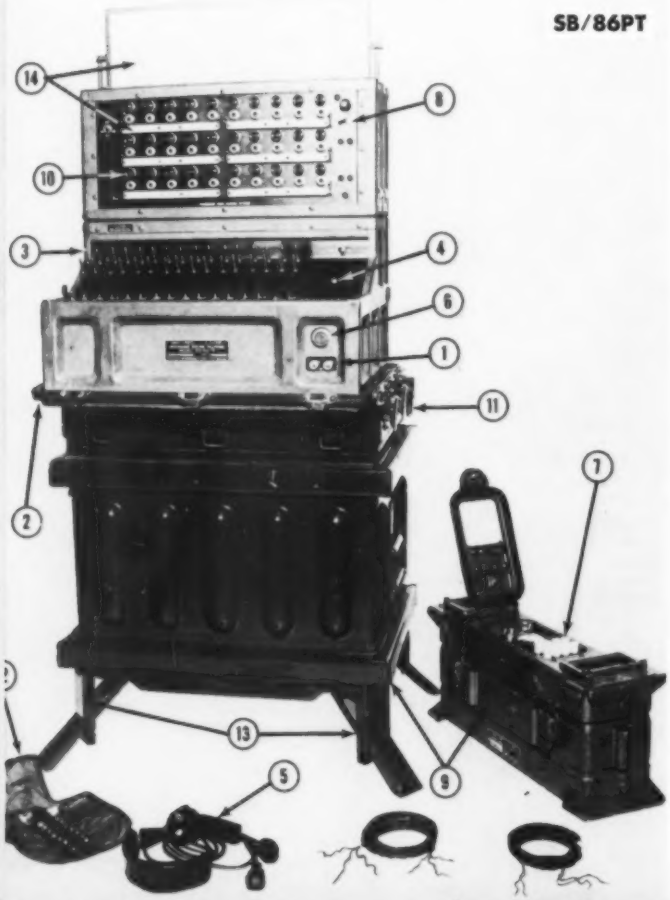
SPARKS from the Commo Shack

A few tips to keep your "voice of command" loud and clear.

WITHOUT the commander's personal attention, the voice of command — COMMUNICATIONS—can become the whisper of despair. Of course, this "whisper" may be caused by untrained personnel or poorly maintained equipment. But regardless of the cause, it is embarrassing (and often fatal in combat) to pick up the handset and find that communications are "out."

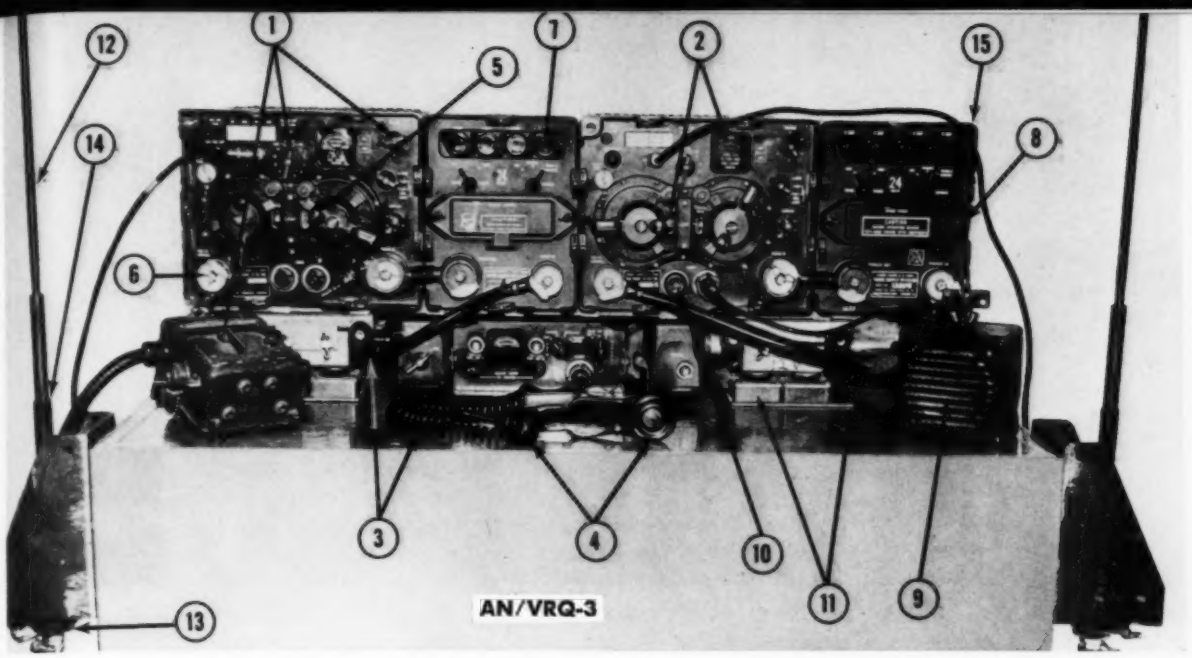
To keep this from happening and to help commanders and communicators stay "on channel," *Infantry* will periodically publish a few sparks of information on Infantry communications. The first of these, published below, includes a list of pertinent publications as well as a listing of PM indicators for two items of signal equipment found in the battle group.

SB/86PT



CHECK LIST FOR SB/86PT

1. Binding posts hold field wire firmly. (Spot check those on rear of jack field section.)
2. Gasket on case cover is not cracked, cut, or hardened.
3. Plugs clean, polished, fit firmly into jacks, not clipped or broken. Plug cords free of cracks, cuts, knots and frays.
4. Emergency generator cranks fairly easily, without bind, when switchboard is not in use; generator crank securely fastened.
5. Head and chest set does not have cracks, breaks or loose fittings; the head band has curved shape and the cord is free of cracks, cuts, knots and fraying.
6. Audio connector is free of rust, dust, corrosion, and foreign material that would prevent a good electrical contact.
7. Power pack carefully checked (inside) for signs of rust and corrosion; batteries must never be stored in power pack when it is not in use.
8. Switches give indication of positive contact when placed in operating positions.
9. Equipment spot painted where necessary. (Only spot painting is authorized at battle group level.)
10. Covers over visual indicators secure, free of cracks and breaks.
11. Latches not deformed and have spring tension.
12. Canvas roll present, clean, free of mildew and contains spare parts.
13. Legs and support straight and securely fastened.
14. Identification strips and traffic diagram board clean when switchboard is not in use.
15. Preventive maintenance indicators shown for this switchboard can be applied to the switchboard SB22.



CHECK LIST FOR AN/VRQ-3

1. Switches and knobs securely fastened but not so tight as to prevent functioning.
2. Dial and meter windows secure and graduations and figures clearly readable through windows.
3. Cables do not have cracks, cuts, knots or fraying and connections are secure at both ends.
4. Moisture cover over receiving and transmitting elements of hand set.
5. Tuning knobs are securely fastened and operate the tuning dial.
6. Wing screws on connections are not bent or deformed and connections fit securely when tightened in place.
7. Fuse holders present and fit firmly.
8. Spare fuses carried in spare fuse holder.
9. Speaker cone is not punctured.
10. Audio connections clean, free of rust, dust, corrosion, and covers present.
11. Radio mount securely fastened to the vehicle and rubber shocks not cracked or cut.
12. Antenna sections present, straight; joints clean, free of rust and corrosion.
13. Mast base is not cracked or broken.
14. Antenna spring flexible and holding antenna in an upright position.
15. Radio case does not have any structural defects, i.e., punctures, cracks, loose reinforcement.

A list of important Signal publications.

AR 750-5	CITES MAINTENANCE RESPONSIBILITIES
AR 750-625	PRESCRIBES FORMS, PRACTICES, AND PROCEDURES FOR PREVENTIVE MAINTENANCE AND SPOT CHECKS OF SIGNAL EQUIPMENT
LO	PROPER LUBRICATION INSTRUCTIONS
MWO	CITES ALTERATIONS AND MODIFICATIONS TO BE PERFORMED
SIG 1	EXPLAINS USE OF SIGNAL PORTION OF ARMY SUPPLY MANUAL
SIG 5-2	CROSS REFERENCE LISTING OF FORMER SIGNAL CORPS STOCK NUMBERS and FEDERAL STOCK NUMBERS
DA PAM 310-21	INDEXES OF MANUALS IN SIGNAL PORTION OF ARMY SUPPLY MANUAL
DA PAM 750-1 (w/c 1)	PREVENTIVE MAINTENANCE GUIDE FOR COMMANDERS
SB 11-100 (SERIES)	STANDARDS OF SERVICEABILITY
SG 11-131	A GUIDE FOR PREPARING REQUISITIONS FOR VEHICULAR RADIO SETS. CITES STOCK NUMBERS OF BASIC AND INSTALLATION UNITS REQUIRED FOR SPECIFIC VEHICLES
SM 11-2	PRICE LISTINGS OF SIGNAL CORPS EQUIPMENT
SB 11-6	ESTABLISHES BASIS FOR DETERMINING DRY BATTERY REQUIREMENTS
SM 11-5	BRIEF DESCRIPTION OF SIGNAL EQUIPMENT FOUND IN TOE'S AND TA'S
TA 11-101	AUTHORITY FOR REQUISITIONING EXPENDABLES FOR A SPECIFIC UNIT
TM	TECHNICAL INFORMATION ON A SPECIFIC ITEM OF EQUIPMENT
TOE	AUTHORITY FOR AND QUANTITIES OF MAJOR ITEMS OF EQUIPMENT

為汝之毀滅而設計

DESIGN for your DESTRUCTION

Here is a chillingly plausible argument which challenges those who would replace men with machines . . . .

by MSgt Forrest K. Kleinman

BEFORE I tell you how we will destroy you, let me introduce myself. I am Colonel Chang of the People's Army. Many of you were in Korea with me, but you were too busy to make my acquaintance there. I, too, was busy—killing Americans and learning how to kill more in the future.

No doubt you returned from Korea with many valuable lessons for your own Army's reference. Judging by newspaper reports of your military plans for the future, however, the big lesson of Korea has completely escaped you: *We have discovered how to overcome your vaunted superiority in machines and have perfected in quantity a weapon for that purpose.*

True, we did not employ this weapon for maximum effect in Korea; we did not destroy your Eighth Army. To accomplish our mission in Korea, it was neither necessary nor desirable for us to reveal our full power. We merely tested, and learned to our satisfaction that we can do the job—when the time comes.

Nonetheless, the big lesson of Korea was apparent for you to profit by, had you considered the *capabilities* that we demonstrated—instead of allowing yourselves to be misled by the extent to which these capabilities were exploited. For example:

Remember the many times when neither your artillery nor your planes could find a remunerative target, yet you knew we were there because we visited you every night in spite of all the shells your guns wasted on interdiction of roads and villages? Do you think an observer could have found an atomic-size tactical target where there was none large enough to be profitable for a 105-howitzer?

Remember your Christmas Season of 1950 when we moved an entire

corps by night to an assault position within artillery range of your 24th Division north of Uijongbu, yet neither your air spotters nor your patrols could find us? It was cold lying under the snow during the day, but we didn't mind. The next night we captured Seoul. For us, this was an excellent training exercise for the future.

Remember those big offensives? Every time we tried, we achieved a breakthrough. True, you were able to contain them by maneuvering your reserves. But what do you think would have happened if we had simultaneously employed a few of our 1500 planes to interdict the roadnet at critical junctures? How, then, would your motorized Artillery and Infantry have moved to contain our massive penetrations?

Those of you who were in the Eighth Army's precipitous retreat from North Korea that first winter were praying, no doubt, that we wouldn't cut the one road out—choked as it was, bumper to bumper for days on end, with one-way traffic south. Sometimes, I wonder myself that our General Staff didn't yield to the temptation to permit at least a single plane to drop a single bomb—on the Pyongyang bridge, for instance.

Remember the published reports of your Air Force on the number of bridges and railroad trains they destroyed? At the very time that the total claimed was in danger of exceeding the grand total of all the bridges and trains in all of Asia, we were better supplied than at any time in the war. Before the Armistice talks began at Panmunjom, your Eighth Army Commander publicly admitted that we had more artillery in Korea than you did. And we had the ammunition to fire our big guns, too—as those of you who were at Pork Chop Hill can eloquently testify.

How did we do it? With our secret weapon—"secret" only because you stubbornly refuse to recognize man's true capabilities in modern warfare. You pay lip service to man as the "mightiest weapon of war," but you plan to replace him with more machines. You speak of greater mobility and greater firepower on the battlefield of the future, and yet you ignore the big lesson of Korea—that man alone is the only completely mobile weapon on any battlefield!

As for more firepower, many of your guns that we captured in Korea had not been fired. Few had been fired effectively or else we would not have captured them. Your firepower problem wasn't quantity; it was *usability!* You had the weapons—it was the well-defined, easily located target that you lacked. And in the future, we plan to aggravate this problem for you.

Consider for a moment this battle-tested weapon of ours—the trained Oriental Infantryman. It is self-propelled, capable of near invisibility while enroute to the target. It has a 24-hour cross-country range up to 40 miles. Its killing radius at the target is up to 3000 yards. It can be effectively employed against any kind of machine that your factories have yet produced. It has an all weather capability, is available in unlimited quantity and is expendable!

When will your factories produce a machine to equal it?

Before I go on to describe the ways that we will use this weapon to destroy you and your machines, I must make an admission about our Army in Korea. We did *not* have more Special Service shows than your Army had! Nor more typewriters! Nor more steel and canvas cots! Nor more PX trucks! Nor more beer and Coca-Cola! But when you consider what we were able to do without all of these American military necessities, think what we could have done with the luxury of air cover!

Think what 20 million of us could do in the future with Russia's 20,000-plane umbrella over our heads! Think what we could do in the future with *nuclear weapons* to support us!

Apparently your military planners have been thinking about such a future, and they have come up with

"Fire teams will be disguised and interspersed with refugees."

some very interesting answers from our point of view. According to your newspapers and military periodicals, you plan for small mechanized units of great firepower widely dispersed and distributed in great depth.

Good! This is made to order for us. Here is how we will enmesh and destroy your mobile forces!

We will attack you like rain—in thousands of droplets of men. Like rain we will seep through to the very bottom of your battle positions, and pool for close assault against your mechanized units. Then we will strike!

As our unending showers of men in fire-teams of three, disguised and interspersed with women, children and civilians, approach and pass between your mobile forces, where will you find a target for your vaunted firepower? Will you use an atomic artillery shell to destroy three men? Will

"Despite your destruction we were never better supplied."

"Will you use an atomic shell to destroy three men?"

you kill everything that moves at night between your islands of machines? If so, what will you do with the civilian population of the country you are defending? And when the night comes for us to strike simultaneously at each of your islands of resistance, which do you think will have the most *usable* firepower at a range of 50 yards—an atomic cannon or an automatic rifleman? . . . A tank or a dozen bazooka men?

While you think of this, consider the kind of attack order that one of our battalion commanders might issue on the battlefield of the future:

"The American Forces are dispersed in mechanized battle groups of approximately 1000 men and 200 vehicles each to a depth of 60 miles to our front.

"On the night of 5 March, the People's Army will destroy them by close assault.

"Beginning on 4 March, our guerrilla forces within the enemy's battle position, reinforced by airborne commandos, will cut all wire, rail and road communication between the enemy's so-called mobile forces . . . and of course they will jam his radio nets.

"This battalion will pass between the forward American battle groups and destroy Battle Group X located in the general vicinity of TAEPU, 41 kilometers south of here. Movement to assembly areas in our target area will begin at 1800 tonight, 1 March, by fire-teams (three men), with rear fire-teams of each company departing at 1800 tomorrow night, 2 March. Normal march dispersion of 1000 yards between fire-teams will be maintained.

"Company assembly areas are shown on this sketch. Final orders for assault will be given on night of 4 March, based upon information from our agent in TAEPU area.

"While enroute to target area, fire-teams will move only by night, hide by day. Hostile contact will be avoided. Civilian uniforms will be worn and weapons concealed. Maximum use of refugee and civilian groups for cover will be employed.

"One additional pound of rice and bandolier of ammunition will be issued to each man.

"Radio silence will be maintained except for reporting atomic targets only.

"Remember to intersperse our forces with theirs soon after the attack. Once we are in the battle group positions, they will not dare to use their nuclear weapons.

"Any questions?"

So you see, this is how we will swamp your "islands of resistance" in a sea of men.

This is our design for your destruction.

"Are you certain that your motorized Artillery and Infantry can move?"

The opinions expressed in this article are those of the author and do not necessarily reflect official thinking of the Infantry School.

MSgt Forrest K. Kleinman enlisted in the Army in 1934. The following year he received a reserve commission and was ordered to duty with the 15th Infantry. During World War II he served with the Joint Re-armament Committee and commanded a training company at Camp Roberts. In 1945 he became the adjutant of the 1st Infantry Regiment. He then was named public information officer of the 24th Infantry Division. He left the 24th in 1952 to become chief of the War Briefing Section in the Office of the Chief of Information. Following a break in service, Sergeant Kleinman served as a secretary to General Dean at Headquarters, Sixth U.S. Army, before assuming his current duties at USCONARC. Sergeant Kleinman holds a reserve commission of lieutenant colonel.

THE GOERS ARE COMING — so what?

Versatility is too often only a goal.

Here is a vehicle which truly has multiple capabilities.

by Maj T. E. Terry

VOLUMES have been written about the GOER. Military periodicals and newspapers have been filled with descriptions of "exoskeletal construction" and "positive-power wagon-steer" (GOER characteristics) as well as with pictures of these lumbering vehicles. Consequently, when the Infantryman is told, "The GOERS are coming,"—his yawning reaction might be "So what?"

This is understandable, since it is often difficult to translate technical jargon and military characteristics into something meaningful—such as battlefield potential. But unless this jargon and these characteristics are so translated for the GOER, we may fail to realize the tremendous potential of this vehicle. And we may also fail to utilize this vehicle to its fullest capabilities. So this is why we need an answer for "So what?"

The answer, to put it directly, is that everything the Infantryman will do—whether it is to shoot, move or communicate—and everything he will use—will be affected by the GOER.

To the tactical commander, for example, the GOER vehicle now means that he can count on receiving the bullets, beans and POL when he needs them. No longer will he be

GOERS provide flexibility by refueling in forward areas where conventional vehicles often cannot go.

forced to curtail his tactical plans because of limited rates of supply and limited transport for its delivery. And with the GOER, there should be a lessening of the old cry, "Too little or too late."

The large tonnages of military supplies can be moved well forward into the division areas by the 16-ton GOER vehicles. No longer will we need to rely on roads or rails to bring all of the needed supplies into the battle area. Logically, the 16-ton GOER might even carry supplies down to battle group trains areas where supplies and fuel may be transloaded to 8-ton GOERS for subsequent delivery to individual company areas. Thus, the GOER can ensure that the Infantryman gets the logistic support he needs—when he needs it.

This 5-ton cargo GOER continues to roll while conventional wheeled vehicles are forced to wait for a dry spell.

Additionally, the GOER has potential as a troop carrier, kitchen transport, ambulance and mobile fire direction center. But rather than continue in the vein of what the GOER has, or *can* do, let us instead examine what (and how) the GOER *has* done. Perhaps then we can better realize the impact of the GOER concept on future operations.

In October of last year, three test bed vehicles were evaluated by the Infantry School; this, of course, was just a portion of the overall USCONARC evaluation of the GOER vehicles. In addition to the large 15-ton cargo and 5000-gallon tanker test bed vehicles, a smaller 5-ton cargo vehicle, the XM520, was also evaluated by the Infantry School. The smaller vehicle, while possessing most of the GOER characteristics, was different from the large cargo and tanker vehicles in that it was not exoskeletal and therefore was not amphibious. The XM520 was also significantly different in that rear wheel drive was provided by mechanical means (i.e., through drive shafts and conventional type U-Joints and rear axles) rather than by separate electrical motors for each rear wheel as in the case of the larger vehicles. Similarly, instead of the positive-power wagon-steer being accomplished by electrical drive, as in the case of the big vehicles, the XM520 achieved its positive-power wagon-steer by a two-way hydraulic cylinder. Instead of dwelling on the detailed characteristics of the GOER, let us consider how these characteristics were put to work in the field test.

In the Infantry School's recent evaluation conducted at Fort Knox, Kentucky, GOER vehicles were used in many different types of field operations. For example, the GOER was evaluated as a troop transport. In the testing of this capability, it was established that the 15-ton cargo vehicles could transport 60 standing troops (with individual combat gear and weapons) or 40 seated troops so equipped. It was also established that

Infantry troops preferred the ride characteristics of both GOER cargo vehicles to those of the standard 2½-ton truck. This is because the large low-pressure GOER tires provide a soft ride, whereas the high pressure tires and stiff-spring suspension system of the 2½-ton truck are unable to provide the same cushioned ride. For these same reasons, participating troops also preferred the GOER test bed vehicles over the 2½-ton truck for emergency medical (on litter) evacuation. Significantly, it was also determined that all test bed vehicles could operate effectively in mixed convoys of wheeled and tracked vehicles at sustained convoy speeds.

The GOER also proved its worth in the transporting of supplies. It was found that both cargo vehicles were highly suited for transporting representative high density loads of battle group class V supplies. In the evaluation, the cargo vehicles were used to transport these supplies across seemingly impassable terrain. In this test the GOERS gave true meaning to the phrase "Mobile Supply Point." Additionally, it was found that supplies could be rapidly transloaded from one vehicle to the other by the use of a piece of pierced steel planking.

It was also noted that the GOER'S cargo bed height is 30 inches, as opposed to the 44-inch height of the 2½-ton truck and the 50-inch height of the 5-ton conventional truck. The fact that the GOER cargo bed is so close to the ground thus allows easier loading from, or unloading to, the ground. Again, a significant improvement chalked up to the GOER.

These troops are eating hot food prepared while the XM 520 GOER was on the move.

The evaluation also disclosed that the GOER and the helicopter can combine effectively in the logistical role. Tests were made of the feasibility of picking up palletized supply loads directly from the 15-ton GOER cargo bed by use of a hovering H34 helicopter. Since the helicopter can readily hover and pick up such a load, it is conceivable that we could carry supplies as far forward as possible with the GOER; then the helicopter could take over and sling-lift the supplies to their final destination. This is particularly significant, since it is recognized that the most efficient and economical use of rotary wing aircraft for supply delivery is in short radius hauls.

The GOER tanker was also found to be a significant improvement over its conventional counterpart. Refueling was accomplished with the 5000-gallon tanker using all five of its outlet hoses. Under this concept, it was possible to simultaneously refuel five M41 tanks, or five M59 APCs or two M48 tanks and a third vehicle. The GOER tanker proved its battlefield potential by refueling a unit in an assembly area and then operating as a roadside filling station during a tactical march. Subsequently it refueled a mechanized rifle company *on the objective*.

As a kitchen transport, GOERS were found to be equally effective. By placing three M37 ranges in the cargo bed of the 5-ton cargo vehicle, it was found that the space readily accommodated a mobile company kitchen. An entire meal was cooked in the vehicle. The pork chops began cooking when the vehicle left the cantonment area, and by the time the GOER arrived at its destination (after travelling through rain), the meal was cooked.

The 5-ton GOER vehicle was found to be equally suitable as a mobile battle group command post or operations center. The standard equipment (mapboards, field desks, typewriters, etc.,) was readily placed

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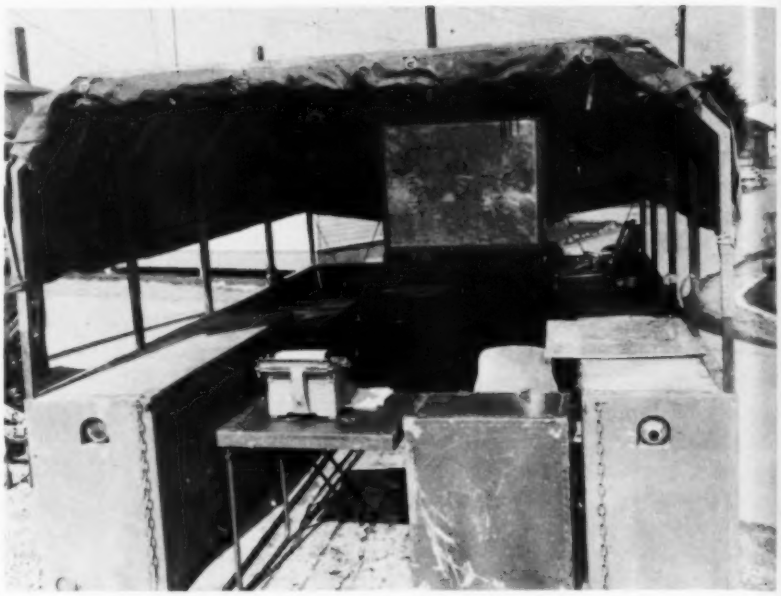
in the vehicle. Since the GOER does provide a marked mobility differential over conventional vehicles, this will enable the operations center or CP to displace readily and to move anywhere at any time. The same could be said for the GOER'S effectiveness as a heavy mortar platoon fire direction center. It can do the job—and better than conventional vehicles.

It is worthy of note that the evaluation of the GOER in these operations was made under severe weather and terrain conditions. During six of the twenty-odd days spent at Fort Knox, it rained heavily, thereby providing realistic conditions of deep mud and slippery surfaces. It became apparent very early in the field evaluation that all GOER test bed vehicles were capable of negotiating muddy terrain, particularly muddy slopes, which was impassable to standard 2½-and 5-ton trucks. The principle reasons for the GOER's "muddy mobility" were the high 30-inch ground clearance (provided by the large diameter tires) and the smooth GOER underbellies, which unlike conventional trucks, have no axles, differentials or spring assemblies to "hang-up" on the ground. The only significant problem

During the test it rained heavily, thereby providing grueling conditions of deep mud and slippery surfaces.



No alterations are necessary to make the 5-ton cargo vehicle a mobile command post or operations center.

area encountered with the GOER test bed vehicles was the tendency of the 15-ton cargo vehicle and the 5000-gallon tanker to side slip when traversing muddy side slopes. However, had the driver-controlled tire-pressure inflation-deflation mechanism been operable, this problem might have been resolved. This device, which is currently being evaluated by the US Army Armor Board, permits the driver to soften his "uphill" tires, to say 15 psi, while hardening his "downhill" tires to about 30 psi. Thus he can establish the optimum "bite" on the muddy side slope. In this regard, side slope performance on dry surfaces was found to be excellent for all GOER test bed vehicles; it was also found to be excellent for the 5-ton test bed vehicle on *muddy* side slopes.

One other impressive capability demonstrated was the ability of the GOER to successfully climb muddy and rutted tank trails on slopes up to 36 percent. These same rutted tank trails defeated some tracked vehicles, thus necessitating their rerouting to reach the top of the hill.

Although the on- and off-road performance of all GOER test bed vehicles was impressive, the capabilities of the 5-ton cargo vehicle were particularly noteworthy from the Infantry point of view. It is this vehicle, perhaps slightly elongated and with an 8-ton payload, which can and should replace the 5-ton cargo trucks and many of the 2½-ton trucks in our current Infantry Division TOE. This smaller member of the GOER family, while primarily a general cargo vehicle, was also found to have real potential as a command post and FDC vehicle, a kitchen transporter and as a chassis for a 2500-gallon tanker vehicle. It proved that, on the future battlefield, the logistical and administrative "tail" may well be a short one, since the command and logistical vehicles can now readily go into the difficult combat areas, if need be.

All in all, then, the GOER has proved that it can literally "make the grade" when it comes to filling the Infantry's logistical vehicular requirements. With its present versatility and outstanding future potential, the GOER is no longer coming—it has arrived.

The opinions expressed in this article are those of the author and do not necessarily reflect official thinking of the Infantry School.

Testing the Test

A report

on the Army's new Physical Combat Proficiency Test,

including its inception, development and purpose.

by Lt Col J. E. Reilly

THE NUCLEAR battlefield poses many problems which were nonexistent in World War II and the Korean Conflict. With the expanded frontages and distances in depth and the disappearance of linear warfare, there no longer remains the "front line" behind which there are varying degrees of safety from enemy penetration or infiltration; the one-time haven of safety known as "division rear" is now an exploded myth.

Thus, nuclear warfare allows no areas of safety; every soldier must consider himself a fighter. And he must be ready to fight at any given instant with the aggressiveness, confidence and endurance which, in previous wars, were considered characteristic of the troops in eyeball-to-eyeball contact with the enemy.

The Army's combat mission now requires superb physical conditioning for all elements. And since combat can start with little warning the status of physical proficiency must be tested periodically to insure that troops are at all times physically capable of immediate combat. It follows logically that the test vehicle, to be effective and applicable, must be combat-related.

A study of existing Army tests reveals that the Physical Fitness Test cannot be considered suitable; in no way can it be considered combat-related, as it was never intended to be. The old Physical Achievement Test was far more related to combat tasks; however, it included a triple standing broad jump (which lacked relationship) and another event, the 150-yard man carry, which was not entirely an event for individuals and was difficult to administer.

Obviously, a new test was required in order to measure individual physical proficiency for combat. In July, 1958, a project was begun to produce a valid test which would be acceptable Army-wide and would replace the present Physical Fitness Test.

Fitness tests of other services in

The One-Mile Run is a measure of leg and wind endurance.

the military establishment, as well as those of foreign governments, were studied during early research. Among those considered were the United States Air Force, United States Marine Corps, British Army and Russian Army tests. In this study it was interesting to note that there was a wide divergence of doctrine and objectives.

Since the new test was to be founded on basic combat skills, considerable effort was directed to a study of such skills to determine those most applicable to the bulk of the Army. A host of possibilities, including running, leaping, climbing, crawling, creeping, vaulting, jumping, marching, swimming and throwing, were studied. Based upon such factors as the universal availability of facilities and equipment, uniformity of test conditions and the element of time, it was concluded that the test should consist of five events measuring ability in crawling, climbing, jumping, throwing and running.

Having established the skills to be tested, the next task was to determine the criteria for the test events. This was a most important phase due to the known unpopularity of the Physical Fitness Test and to uncertainty with respect to field reactions to the Physical Achievement Test. It soon became clearly evident that the following characteristics would constitute acceptable test criteria:

(1) Distinct relationship between test events and combat.

(2) Test scores would be obtained by measurements in terms of time or distance, or a combination of both, with the element of human judgment reduced to the absolute minimum.

(3) Elimination of repetitious and monotonous events, such as pushups and squat jumps.

(4) Maximum reduction of test facilities construction costs; elaborate and expensive test facilities would certainly create unfavorable aspects.

(5) Universal uniformity of test facilities and area requirements; for identical results and for purposes of comparison, the test would have to be run under similar conditions regardless of location.

(6) Simplified scoring which would permit a rapid determination of test scores.

(7) A clear distinction discernible between fit and unfit individuals.

(8) Test administration personnel held to a minimum.

(9) Selection of test events in which results—not manner of performance—are of major import.

(10) Inclusion of events which do not test to the point of exhaustion in order to achieve a satisfactory score.

(11) A test battery which could be administered without undue loss of training time.

A battery of five events was selected and the conferees of the World-Wide Infantry Conference, held 2-6 December, 1958, at Fort Benning, were given an opportunity to voice their opinions. These experienced combat commanders heartily approved both the combat skills and the test events which had been selected for feasibility testing.

It might be advisable at this point to take a closer look at the test to see what events had been included and the considerations which governed their selection.

The Physical Combat Proficiency Test is composed of:

1. The 40-yard low crawl.
2. The horizontal ladder.
3. The dodge run and jump.
4. The grenade throw.
5. The one-mile run.

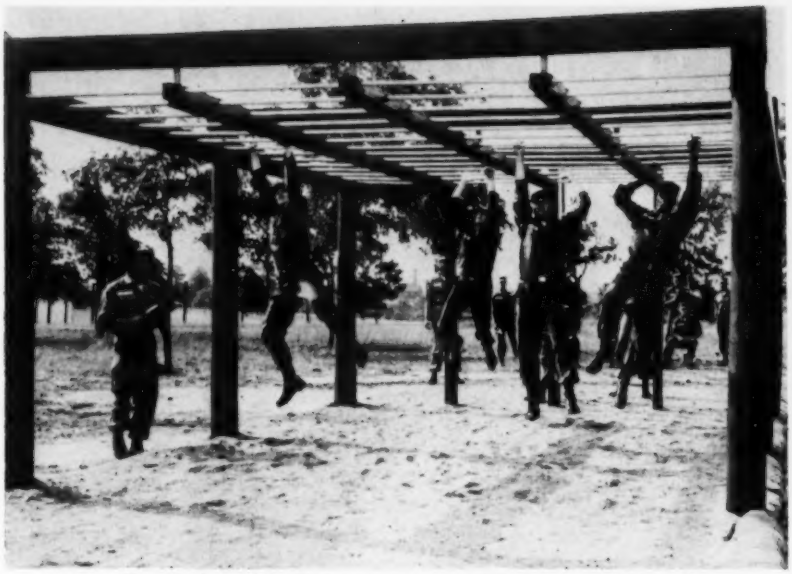
The 40-yard low crawl is designed to test the ability to crawl and is a measure of individual endurance. Examinees crawl twenty yards using only their elbows, knees and feet, keeping their chests close to the ground and their buttocks low; as they near the end line, they touch the line, spin on their stomachs and crawl the remaining twenty yards back to the finish line. Scores are measured by a combination of distance and time. The low crawl is recognized as a practical and desirable event due to the individual soldier's known inability to crawl effectively; it proved acceptable to more than 90 percent of the field test participants.

The horizontal ladder measures general body coordination and shoulder girdle muscular development. Examinees begin with both hands on the first rung and move forward by alternating their hands on successive rungs; when they reach the end of the ladder they turn and start back, making as many round trips as pos-

sible in the time limit of one minute. Should an examinee inadvertently fall off, he immediately starts again on the first rung and receives credit for all rungs negotiated.

The recognized weakness in arm and shoulder girdle muscle groups made mandatory a test event in these areas. Three possible events were considered: the pullup, the rope climb and the horizontal ladder. The pullup was rejected due to its repetitiveness and to the fact that many soldiers cannot properly complete a single repetition. The rope climb finds a lesser but still considerable number of soldiers who cannot get their feet off the ground. On the horizontal ladder, a soldier with fair or poor arm and shoulder development can successfully negotiate several rungs and thus achieve a point score instead of a negative result (with its concurrent psychological or mental block). Rotating rungs, which turn freely in each lane, were introduced as an effective means of reducing the incidence of damage to the palms of the hands. A time limit of one minute was inserted because of the high incidence of palm-skin damage which developed when the event was run on an endurance basis only.

The dodge run and jump measures the ability to jump and to change direction rapidly. Examinees follow directional arrows and run around the obstacles, jump a ditch and then return. Two circuits are required for completion. The entire course totals a distance of fifty-eight yards and cannot be considered an endurance test. Scores are computed on a distance-against-time basis. This event is extremely popular and highly competitive in nature, yet a goodly number of field comments proposed making the event longer and tougher; however, it is designed as a test of individual skill, rather than skill plus endurance, and will not be changed.



The Horizontal Ladder measures general body coordination and shoulder girdle muscular development.

The grenade throw tests the ability to throw accurately and for distance. Examinees throw a total of seven grenades—two for practice and five for record. They begin in a prone position, rise to a kneeling position, throw and immediately return to the prone position. The distance from the throwing line to the center of the target is 90 feet. This is the most surprising event of the test; most individuals like to believe that they excel in this ability, and yet many are poor throwers and achieve surprisingly low scores. This particular event has evoked the largest number of comments for elimination or change; apparently many consider grenade throwing an event unsuited for a physical proficiency test. Those who believe that grenade throwing is not applicable forget that throwing is a recognized physical skill and appears frequently in tests of physical proficiency. The present scoring circles were determined as a result of coordination with hand grenade experts of the United States Army Infantry Board and are based on the effective bursting radius of current grenades. Elaborate embrasure-type targets or built-up foxholes were not utilized since they would increase construction costs. The grenade throw was inserted in the test battery upon determination that, so long as the Army exists, there will be a requirement for a hand-

LT COL JAMES E. REILLY received an Infantry commission upon graduation from New York University in 1936. During World War II he served as a company commander with the 18th Infantry, 1st Infantry Division, and as chemical warfare officer of the 13th Airborne Division in France and Germany. In 1952, after duty with the Operations Section of Seventh U. S. Army Headquarters, he commanded a battalion in the 505th Airborne Infantry. In 1955 Colonel Reilly became advisory team chief with III Corps of the Chinese Nationalist Army. Colonel Reilly was formerly with the Ranger Department. He is now information officer at Headquarters, USAIC.

The Dodge, Run and Jump measures the ability to jump and change direction rapidly.

thrown grenade with explosive, smoke or war gas fillings.

The one-mile run is a measure of leg and wind endurance and of the ability to make a prolonged run. Four laps of a ¼-mile oval (laid out in any grassy area) are required for course completion. Of all the varying distance runs, it is generally conceded by civilian physical-education experts that the one-mile run is the most reliable measurement of endurance. The recommendations for changes in this event have been extremely few; its popularity ensures retention in its present form.

The experimental battery was administered 12-30 January, 1959, to three rifle companies and two mortar batteries selected from the battle groups of the 2d Infantry Division, Fort Benning, Georgia. Climatic conditions varied greatly throughout the test period; the temperature on one day never rose above 28 degrees, yet on other occasions hovered at 71 degrees; periods of brilliant sunshine, low-hanging mists and rain were also encountered. These five units were each tested twice to determine test reliability; ten days to two weeks separated the first and second test.

This initial testing revealed areas in which modifications and further refinements were required, and the modified test battery was given another exhaustive trial ending in May, 1959.

More than 2200 examinees were tested from January to May, 1959, from the following sources:

Source	Number of Examinees
Basic trainees, 2d Inf Div	713
Officers and Enlisted Men, Troop Support Forces, USAIS	1196
Staff and Faculty Officers, USAIS	100
Ranger Course Students	160
Airborne Course Students	82
TOTAL	2251

From compiled statistics and examinee questionnaires emanating from the pilot study test phase, the following conclusions were drawn:

1. The test battery is reliable; administration of the test twice under varying conditions of weather and temperature resulted in uniformly consistent performances.

2. Body height and weight have no appreciable consistent effect upon test performance; large, heavy examinees scored as well as the smaller, lighter examinees.

3. All ranges of performance, from low to high, can readily be measured; consequently, individuals in poor physical condition can be separated readily from those in good condition.

4. Each test measures the physical condition of *different* parts of the body; the tests were not repetitive in this respect.

5. Administration of the test produces a negligible incidence of injuries. During the pilot testing no examinee was sent to the hospital directly from the test area nor were there subsequent admissions resulting from test participation.

6. Officers as a group performed better than noncommissioned officers and, in some events, performed better than other enlisted personnel in the lower grades.

7. The test battery is combat-related, easy to administer, simple to score and far more desirable than the present test.

8. The 40-yard low crawl, as was expected, was the least popular test event; surprisingly, however, the majority vote was cast for the one-mile run as the most popular event.

9. Personnel up to and including age 40 can readily be given the test.

The finalized test battery was thus ready for the last and biggest hurdle —the field test phase. Although it was accepted by a large and varied group at Fort Benning and was given a last polish, would the proposed test stand up when administered to some 9000 officers and enlisted men from units typical of a type field army?

At USCONARC direction the field tests were conducted 1 July-30 September, 1959, at the installations indicated below:

Installation	*Personnel Tested*
Fort Bragg, N. C.	3188
Fort Gordon, Ga.	396
Fort Jackson, S. C.	663
Fort Rucker, Ala.	486
Fort Stewart, Ga.	653
Fort Carson, Colo.	1658
Fort Riley, Kan.	1668
Fort Leonard Wood, Mo.	1090
Total	9802

The examinees selected for field testing should, of course, constitute a valid cross-section of the Army and should establish a solid foundation for a scoring table applicable Army-wide. Every enlisted rank and all officer ranks, up to major general, were tested including 30 examinees who had passed their fortieth birthday. A total of 835 officers and 7724 enlisted men in TOE or TD assignments, plus 1243 basic trainees, took the test. Participants included members from all branches and all technical and administrative services. Personnel aged 17 to 24, inclusive, comprised 70 percent of the total number tested.

The field test phase confirmed the results of the initial Fort Benning testing; an overwhelming majority of examinees and observers strongly recommended adoption and Army-wide use of the test. Major General Dwight E. Beach, Commander of STRAC's rugged 82d Airborne Division, made a comment which was typical of those received. "I believe the new test is a great improvement over anything we've had in the past; it will more realistically indicate an individual's physical preparedness for combat."

While the test has already evoked much favorable comment, the analysis, evaluation and interpretation of the masses of statistical data resulting from the field test are as yet incomplete; consequently, a factual basis for definite recommendations is not available. Such questions as the type and nature of the test scoring table, the breakdown of age categories to allow for advancing age, the possible elimination from test participation of specific branches of service and many others cannot be answered until data analysis has been completed. However, the statistical data of the initial testing at Fort Benning and the responses from the field test provide substantial foundation for the following likely recommendations to Headquarters USCONARC:

1. Adoption and use of the Physical Combat Proficiency Test as the standard measure of physical fitness for male Army personnel.
2. Elimination of the Physical Achievement Test from testing procedures.
3. Continuation of the Physical Fitness Test on a reduced basis for specific situations, such as the physical fitness pre-entrance requirements for Airborne applicants.
4. Establishment of an individual minimum acceptable standard of physical fitness, to be derived from an examination of field test scores.

Thus, it is clearly evident that the purpose of the test project has been achieved; the Army has produced a valid and acceptable test of physical proficiency for combat.

In essence, the test has "passed the test."

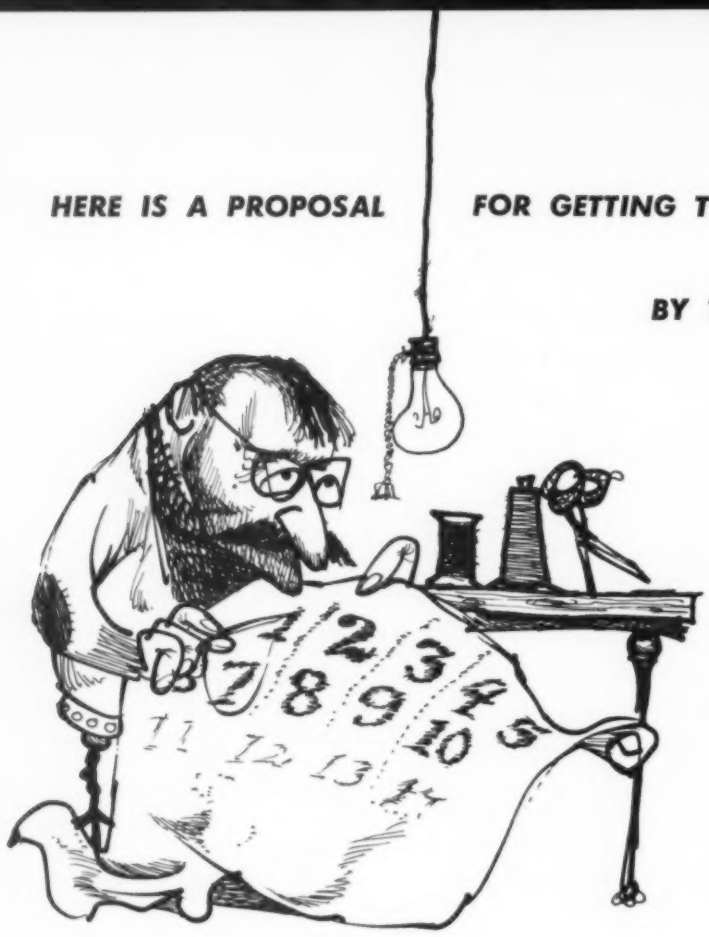
The Grenade Throw tests the ability to throw accurately and for distance.

DO WE?

No, we don't have even a *little* suggestion box—all we have to go on are your letters and comments. So if you have an idea on how we can improve *Infantry*, whether it is a new feature or a suggested article for the magazine, let us know.

We aim to please, but without your comments —complimentary or critical—we won't hit the mark.

HERE IS A PROPOSAL FOR GETTING THE MOST OUT OF TRAINING BY TAKING A "STITCH IN TIME"



TAILOR TRAINING TIME

by Capt Paul B. Malone, III

ARE WE any better prepared or any more secure now than on that Sunday morning in December, 18 years ago, when American fighting men were rushing about in their underwear trying to locate the keys to the arms room? A good question.

It's possible that our inflexibility in one small area—time—has put us in the same position now as we were on that particular Sunday morning. As "natural" and sacrosanct as it seems, our traditional adherence to the six-day work week—with one day of rest—may result in inconsistent peaks and valleys of combat readiness. Our emphasis on this rigid schedule may, in fact, not only produce a fluctuating day-to-day posture of preparedness but less efficient training and lower standards of morale, as well.

The answer to our initial question ought to be a resounding "Yes!" The unfortunate — and telling — thing is that our answer is at best conditional. I say unfortunate because many—perhaps most—of the problems outlined above could be resolved by a simple process which might be called "tailoring training time."

Essentially this tailoring process involves nothing more than fitting the work or training cycle to the mission and to the effects of the mission upon participating personnel.

Of course, only the breadth of this proposal is original. Many civilian and some military installations requiring continuous activity or alert operate on unorthodox schedules. SAC crews, NIKE missile battery crews and hospital staffs, to mention a few, function according to a time scheme which varies greatly from the seven-day cycle. Why then, couldn't we do the same in the scheduling of training in the Army?

As the first stitch in this tailoring process, we could encourage all organizations and activities to disregard the seven-day cycle when it is determined to be locally desirable to do so. Commanders would thus be

given complete freedom in scheduling work or training, and the results, I think, would pay dividends.

Look at training efficiency, for example. Military training runs the gamut of types of activities. The effects of these activities upon the individuals concerned vary greatly. Some activities place great mental and physical strain upon the trainee, others do not. In consequence, each type of training should be analyzed individually and a cycle of work and rest established which is appropriate to the type of activity concerned.

If a certain type of training more or less exhausts the student physically or mentally in three days, he should not continue training in a semi-effective status just to round out the traditional training week. In Army Primary Flight Training, for example, the cycle is five training days followed by two duty-free days. It is possible that the two-day rest period interrupts carry-over and retention of what the student pilot has learned. Would shorter training periods with one day of rest perhaps be more effective? The question is not far-fetched and deserves an answer.

A *staggered* training schedule also deserves consideration when we are training large numbers of troops with limited training facilities and equipment. Full utilization of limited facilities and equipment by a system of trainee rotation could get more out of the training dollar in any situation, and would transform an unworkable situation like the one described above into a workable, efficient one.

Another important consideration in staggering training schedules is combat readiness. If we could disregard the traditional week end, we might maintain a sizable portion of our combat strength in constant readiness. One needs merely to recall how many wars have started on Sunday morning to realize how important this *constant* combat readiness is. This would be another tangential benefit of our "tailored training time."

Overcrowded training facilities create all kinds of problems.

Another important benefit might be improved morale. We are by no means arguing for a general relaxation of system and rules, nor of the discipline which supports them. Yet whatever morale is, the individual soldier's free time plays a large part in it. Unfortunately, the infringement upon legitimate free time for whatever reasons—some good, some not so good—constitutes a major cause of discontent and restlessness in many units. At present, when the retention of trained personnel in the service is essential, the scheduling of training so that duty-free hours can be planned for and enjoyed becomes quite important. Morale is bound to improve when the soldier realizes that he is working when his work is needed, and that he is "off" when he can reasonably expect to be.

Consider this also: how much of a morale boost do troops get out of stopping a field problem on Sunday for makeshift "A&R" activities? Wouldn't it be better to continue training and defer the free day so that it could be enjoyed in garrison where adequate recreational facilities are available? And how many units have returned from extended periods in the field only to wait for the week end for their well-earned relaxation? The answers to these questions are obvious.

Duty-free time, like duty time, should be closely studied in relation to the conditions of the local area. Perhaps in areas where there is no "recreation potential," a frequent half-day off for rest and relaxation

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would achieve more in morale improvement than an entire week end of idle discontent. Under other conditions, three duty-free days and a longer cycle might offer the only real opportunity for adequate recreation.

Suppose we construct a hypothetical situation to illustrate some of the possible gains accrued through flexibility in scheduling.

A United Nations "police action" occurring in 196- requires an immediate expansion of active Army ground forces. The — U. S. Army Reserve Infantry Division, among others, is called to active duty and proceeds to Camp Boondocks for training prior to possible overseas commitment.

This post, a World War II training camp, has seriously deteriorated since it was closed in 1946. Its buildings are sadly in need of repair; limited training and recreational facilities require considerable renovation. Further, the camp is located in a rural area. Towns within 75 miles are small, and off-post recreational facilities are limited, particularly for large groups of young men. Local counties are "bone dry." One hundred miles away, however, in a "wet" county, is a seaside vacation area with numerous recreational facilities.

The situation greeting the division commander is one of feverish renovation, with first priority going to living areas. The arrival of his troops and the commencement of training, however, must take place before construction is complete. Primary requirement in preparing his division for combat is approximately 16 weeks of basic unit and advanced unit training. Following this will be a four- or five-week maneuver period.

Upon careful study of the situation, the commander concludes that a normal training program with the entire division following the traditional Army training week would present serious problems. In addition, the crowding of units into inadequate training areas and facilities, and the saturation of local areas with troops on the week ends, would be far from desirable.

At the direction of the division commander, the G3, seeking at least a partial solution to these serious problems, outlines the following general plan:

a. An eight-day, 48-hour training cycle is adopted. This consists of six days of training followed by two duty-free days. Administrative schedules are tailored so that off-duty units are not involved in post or division details.

b. Major units without division-support responsibilities are separated into four training groups. As an example, Group A consists of Divarty plus one battle group; Group B contains two battle groups; Group C consists of a tank battalion plus one battle group; and so on through the division. (See figure 1).

c. Training group schedules are then staggered two days apart, so that on any day during the period, including Sunday, approximately three-fourths of the division is training.

d. Units with administrative or training-support functions are authorized to tailor individual schedules to best contribute to the performance of their missions.

e. Religious services are scheduled on Sundays during training for all on-duty training groups.

As a result of this plan, division morale is greatly enhanced and community relations become excellent, particularly when compared with areas engulfed by great numbers of idle men on each week end. Safety supervisors find reason to rejoice in the distribution of traffic and the "moderate" atmosphere.

Regular bus schedules to the beach resort contribute to excellent opportunities for highly enjoyable two-day rest periods, and prices in the area remain remarkably stable since the soldiers are not competing with week-end vacationers for the normal vacation services.

Hardest hit by this plan are division chaplains who find Sundays busy indeed. Field service kits and 1:25,000 maps are dusted off as chaplains serve large numbers of personnel with units in the field.

But far more important, a uniform level of preparedness is maintained because the division is always "on guard." Training proceeds at maximum efficiency. The Army, in short,

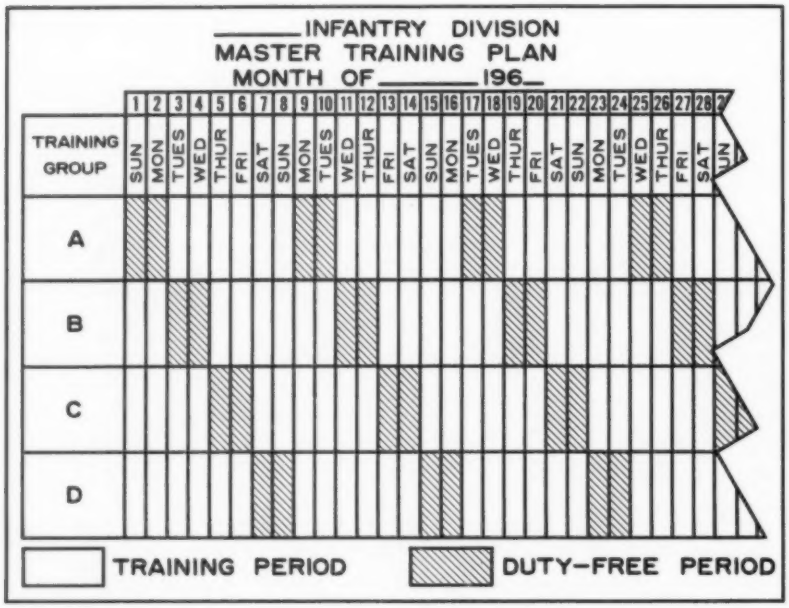


Figure 1. A workable plan for tailoring training time.

Recreation facilities also require proper scheduling.

runs the week, and not the week the Army.

Of course the tailoring system produces problems along with the advantages. One of the major problems is the requirement for continual command, administrative and logistical support. This results in an increase in overhead personnel—undesirable, but necessary. Clerical civilian personnel working on post are divided into two groups: those with Saturday and Sunday off, and the other group with Sunday and Monday off. Military personnel perform Sunday clerical and administrative duties.

The foregoing example is entirely hypothetical but the lessons it holds are real and vital.

We can no longer afford to be conventional, and some of the simplest and most obvious departures from convention will give us margins of safety and effectiveness we all know we need. We have learned to fight at night and in the winter, but, strangely enough, we have not learned the necessity of *constant* combat readiness.

Time is a precious commodity. Wasted or inefficiently used time is as detrimental to national security as wasted or inefficiently used equipment. If we can get our G3s and S3s out of the seven-day straight-jacket, we will have made important progress in training and fighting efficiency.

We must, in short, take a "stitch in time."

The opinions expressed in this article are those of the author and do not necessarily reflect official thinking of the Infantry School.

FOR PEOPLE IN A HURRY

Following are extracts from *Combat Lessons* (World War II Combat Reports) and *Combat Report from Korea.* They are brief, pertinent and worthwhile to Infantrymen.

Radio operator: *"In wooded terrain we had trouble with our long antennas breaking off . . . we stuck a piece of wire from the antenna socket to the chin strap on the steel helmet . . . it worked fine, too. . . ."*

Squad leader: *"Don't allow the men to relax completely during the lull in battle. . . . Make them remain under cover, even though the enemy may not be firing. That way you'll need fewer replacements. . . ."*

Platoon leader: *"As a green second lieutenant, I got the impression somewhere that the rough, tough individuals (usually the troublemakers in the company) would necessarily be hot shots in combat. . . . A lot of eight balls were tolerated for that reason . . . and the truth of the matter is . . . your best soldiers in garrison will invariably make your best combat men. . . . Impress that upon your junior leaders. . . ."*

Automatic rifle gunner: *"Before every combat mission, I made it a point to check the magazines . . . even a small dent will sometimes cause a malfunction. . . ."*

Machinegunner: *"Don't fire your crew-served weapons (particularly machineguns and recoilless weapons) at night unless it's absolutely necessary. . . . The enemy had grenade teams looking solely for such targets. . . ."*

Mortar squad leader: *"Our gunners are not proficient enough in night firing. . . . We had trouble setting the time fuse on the illuminating shell in cold weather. . . . Teach your gunners to set the fuses before dark and before it gets cold, as they tend to freeze up in cold weather. . . ."*

Company executive officer: *"In the route march or approach march, we found it best to have the vehicles separated from the walking troops, particularly in a suspected mined area. . . ."*

COMBAT LEADER

THE RIFLE SQUAD LEADER-- BACKBONE OF THE BATTLEFIELD

1 In the defense his work might begin w the unit moves up to block a penetra

THE FIELD MANUAL devotes but a single paragraph to his duties. He commands the smallest fighting unit in the Army and the chance of combat may find him a private or a sergeant—for he is notoriously short-lived—but his skill and fortitude are the certainties upon which depend the fortunes of war.

When logisticians, theorists, tacticians and strategists have made their estimates and issued their orders, it is he who transforms paperwork, through a catalyst of blood and sweat, into terms of enemy killed and ground gained. He is part-time engineer, artilleryman, communicator, medic and counselor—but he is always a leader of men. Dealing with the loyal, the shirker, the panic-stricken or the steadfast—whatever the dice of assignment bring him—he must nevertheless lead his men to places from which they may not return and keep them where they may stay forever.

He will never win a battle—and yet no battle will be won without him. For he is the strength, the character, the backbone of the Army—the Infantry Squad Leader.

4 There is no quitting time in combat—"Dig it deep, soldier . . . and keep one man on the AR all the time. . . ."

5 The squad leader's work is a vital part of the comp plan—"Yes sir, we're tied in with the 1st platoon. This gun covers the draw pretty well . . . but we c sure use an 81 mortar concentration out there, too. .

2 Since time is inevitably short, and since he is last in the chain of command, the squad leader often gives and receives his orders on the move.

3 Still, every man must know his place and mission—"Your fire team covers from that dead tree to the draw on your left . . . get your AR in first . . . then clear your fields of fire. . . ."

6 The Infantryman's tools of war are personal and ingenious. The foot mine, barbed wire or perhaps a grenade in a ration can will discourage the enemy attack—"And make sure you hide those grenades. . . ."

7 The Squad Leader's job never ends— ". . . get that rifle cleaned up . . . the old man says we'll be hit about dark tonight . . . stay alert and pass the word if you see anything. . . ."

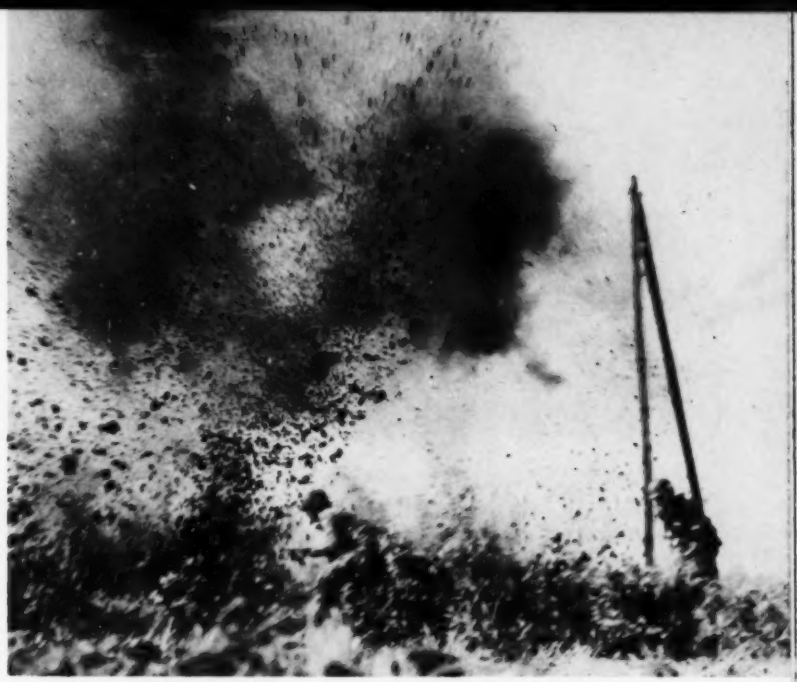
Continued on next page

8 Then it begins—"Roger . . . I can see them . . . about a platoon . . . I'll keep you posted. . . ."

9 "Hold fire on that machinegun . . . that's what they're trying to do . . . find our automatic weapons. . . ."

12 Final protective fires are called for when the battle is fully joined . . . and the moment of decision is quick and violent. . . . For there are no prolonged battles when men come hand to hand. . . .

10 And when the attack does come, the Squad Leader provides the spark that keeps the line intact . . . moving from hole to hole to control his fight . . .



11 . . . shifting men to meet a thrust or fill a gap. . . .

13 But war is more than violence in this—the area where battles are won or lost. . . . There is also fear, suffering and compassion . . . for combat is still the mortal clash of men . . . led by other men. . . .

14 And when all else is cast aside, these men —the Infantry Squad—will fight as a reflection of the man who leads them where they fight . . . the Infantry Squad Leader.

IS THE ANTITANK GUIDED M

The Misunderstood Missile

Despite its outstanding potential, we have been prone to sell this missile short.

by Lt Harry E. Warnberg

If a cause be good, the most violent attack of its enemies will not injure it so much as an injudicious defense of it by its friends.

Colton

I THINK the antitank guided missile fits this category. We have had a large number of critics who have found fault (and offered no constructive suggestions) with the ATGM, but we have also had our share of "injudicious defense" because people did not understand what the weapon was—or what it was intended to be.

In effect, we have been prone to sell this missile short.

The SS10, which is the forerunner of the ATGMs, was not developed as the ultimate antitank weapon. It is not the all-powerful, completely accurate weapon that some people would like to believe. It has its share of shortcomings, but it also has some impressive capabilities. And when these are added up, the capabilities far outweigh any limitations.

Unfortunately, many people do not understand what the SS10 can do. It has been described as everything from a "toy whistle bomb" (in the local papers) to a "new miracle weapon that never misses" (in a national publication).

In my experience on the Missile Committee, I have also heard some general comments on this "toy whistle bomb — that never misses." Some have said that it has already chased the tank from the battlefield. Others have said, "It ain't gonna work." A third group contends that, "It's good —but it costs too much."

The fact is that it *has* taken part of the tank role, it *does* work, but unfortunately, it *does* cost a lot. However, when you consider that you have a thousand-dollar missile that can destroy, *with consistency,* a ¼-million-dollar weapon, this cost argument doesn't hold water. An examination of some other arguments discloses that, while the SS10 or the SS11 are not the final answer to our antitank problems, they are at least a start in that direction.

Take range, for example. The range of the SS10 ATGM is 1600 meters, which doesn't put it in a long-range class until we consider that the penetration effect is as lethal at maximum range as it is anywhere along the line. On the surface, a brief comparison with older Infantry antitank weapons makes this 1600-meter missile range seem a bit feeble. However, with these older weapons, as the range increases, the penetration power (and lethality) decreases. This is not the case with the ATGM. With this weapon, a hit is a kill, and slightly damaging the target (so as to only impair its mobility) will be the exception. The SS10 does not "peck away" at armor at extreme ranges. When it shoots, it shoots to kill. So this is the first advantage of the ATGM. This missile, unlike comparative weapons, is an "all-the-way killer." It is not just another harassing antitank weapon.

Of course, there is a stated minimum range of 450 meters for the SS10. To the unimaginative, this might indicate a gap in the battle group's defense; it might also seem to impose minor limitations in the effectiveness of support during an attack. To the imaginative commander (and the one who knows his weapons), no real problem exists, because the five squads of the assault weapon platoon can be emplaced both laterally and in depth so that one squad's dead space is another squad's zone of action. For decades we have filled in defensive dead space by having machineguns on an FPL fire laterally, if need be, across the front of an adjacent unit. There is no reason why this could not be done with the SS10. More important is the fact that we haven't thrown away the 106mm recoilless rifles with their effectiveness out to 1100 meters. Additionally, we still have a considerable close-range antitank capability in the 50 3.5-inch rocket launchers found in the battle group. Thus, should you desire to align the ATGM squads "dress-right-dress" and fire them straight away down range, there is still ample antitank firepower for ranges of 0-450 meters.

Of course, there are still many other problems that come with the SS10. Cost, bulkiness of guidance equipment and the requirement for specially trained personnel are the most apparent of these.

As an example, it is frequently mentioned that the cost of each *inert* missile is approximately 900 dollars. Also frequently mentioned is the cost of training gunners on highly sophisticated Cinetirs ($62,000.) and Simulators ($8000.).

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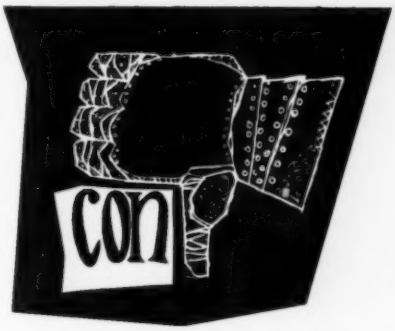
MISSILE WORTH THE COST?

ATGM--The White Elephant



Gold-plated experiments are short-changing the Infantry's antitank protection.

by Captain Ironsides

ANTITANK guided missile articles have lately found favor with the reading members of the military. This is understandable, since, in this era of rockets and space, missile weapons have a magic type of reading appeal. However, most of the articles pertaining to the SS10 and other antitank guided missiles are subject to some straightforward criticism. They have failed to tell completely the story of the ATGM. There have been glowing accounts of the ATGM potential, but few, if any, of the articles have recognized the serious and hampering limitations which characterize the present antitank guided missiles, the SS10 and SS11. Essentially, the writings have missed the point, and, in the rush to be a part of the missile Army, some Infantrymen have also missed the point by subscribing to the ATGM while disregarding the missile price and what has been purchased. In effect, the Infantry has bought a white elephant.

The ATGM field is plagued with deficiencies. Some are of the never-to-be-solved engineer variety, others are of a nature that defy full tactical application, and several present training problems of major significance to the Infantry. Most common of the readily apparent limitations of the SS10 and SS11 is the omnipresent bugaboo of the US Army—money. And the *real* costs of the SS10 and 11 are fantastic when considered in relation to total dollar sums of training, personnel qualifications essential to operation, price of the missiles and the end product—tactical potential. Is the ATGM worth the cost? Certainly not!

The SS10 is supposed to fill an imagined antitank weapon-range void within the battle group. It has a maximum practical range of 1600 meters. How does this compare with other antitank weapons? The maximum practical range of the 106mm Rifle is 2000 meters. Tank weapons readily available to the battle group commander, of course, are far ahead; the 76mm gun tank has a maximum practical range of 4600 meters while the 90mm gun tank has a maximum practical range of 4400 meters. Obviously, the SS10 has failed to extend the antitank range capability of the battle group. The antitank guided missile wire lengths are going to have to be doubled before this antitank weapon can compete with proven antitank weapons. Nor does the improved French version of this weapon, the SS11, overshadow the tank-type weapon, for it is limited to a maximum practical range of 3500 meters. Our heavy investments to obtain increased antitank protection have not paid dividends—at least from a long-range standpoint. And while we were buying wire-controlled missiles we were also short changed on the close-range antitank protection.

The advocates of the SS10 have not denied the fact that the minimum feasible range is 450 meters. However, they have always hastened to add that this exceptional shortcoming is not a limitation of the weapon, but is due to gunner reaction time. It has been found through extensive testing that the most intelligent, best-coordinated soldier cannot stabilize the missile's initial flight stages. The missile travels at a speed of 180 mph—a very slow velocity when compared with other antitank weapons—and consequently it cannot be fully controlled for the first 5.5 seconds of its flight. While the time factor is relatively unimportant, the distance travelled during these few seconds of flight is worthy of tactical consideration. Close-in antitank protection—a bonus gift inherent in other types of antitank weapons—cannot be achieved with the SS10. Moreover, the SS11 does not offer a premium in this respect, for the minimum practical employment range is *increased* to 500 meters. For the Infantryman, this area between 0 and 500 meters is still a critical one, since he is just as liable to find tank targets within this range as he is to find them beyond 500 meters.

Another problem in this missile program is in the personnel field. Unless he has uncommon qualifications, the Infantryman cannot hope to be an antitank guided missile gunner. To qualify as an ATGM gunner calls for exceptional physical and mental abilities. Varied manipulation tests are given to measure the potential gunner's hand-eye coordination. The candidate must demonstrate a high degree of proficiency with tweezers and small objects. Provided he can use a surgical instrument to nimbly place pins in small holes drilled in a board, he is permitted to take other hand-steadiness tests. Combined passing

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The Misunderstood Missile

(Continued from page 44)

On this shallow basis, then, the ATGM would seem to be a prohibitive weapon. From a practical, common-sense standpoint, however, the cost is all but prohibitive. For when you compare the SS10 with a light gun tank, the ATGM stands out as a solid (and thrifty) investment. The tank, which is the only antitank weapon with comparative, accurate range, costs approximately ¼-million dollars, as opposed to the thousand-dollar cost of the SS10. Further, when you remember that the ATGM can be fired from the M59, helicopters or from ground or truck mounts, it is evident that this weapon has a unique versatility that the tank does not have. In the ATGM, therefore, you have many weapons in one weapon. Certainly it might be desirable to have enough tanks to take over the entire antitank role; however, from a cost consideration alone, it is evident that other less expensive weapons must be used. So on an *actual* cost basis—looking at the whole picture, not just a few isolated figures—the ATGM is not a waste, but a necessity.

While the ATGM guidance equipment is admittedly bulky, it does not weigh as much as the 90mm gun tank or the 106 recoilless rifle. Thus, it compares favorably, but what is more significant, there is much promise for further reduction in weight and size. Since the ATGM is a relatively new weapon, there is still much that can be done through miniaturization. Even though it now requires four men to carry the guidance equipment when it is removed from the ¼-ton vehicle, it is hoped that streamlining of the ATGM can eventually result in a one man load. In any event, the ATGM (including all components) is still the *only* long-range antitank weapon which can be readily airtransported by all existing Army aircraft.

In discussing the training required for the ATGM gunner, I am reminded of a recent incident in which a lieutenant tried a few simulated firings on the electronic trainer. His reaction was unfavorable, and he apparently thought the weapon was too complex or sophisticated because he said, "I would like to feel that I could fire any weapon within the battle group if it became necessary, and the SS10 makes one that I can't."

This officer was, in effect, selling the missile short even though he had made but a few simulated firings. In this too brief experience, he had apparently gotten the impression that the ATGM was over-complicated. But if we had taken him out on the recoilless, mortar or machinegun range (assuming he had no prior experience), I suspect that his reaction would have been the same. Unfortunately, it takes a lot of training to make a proficient gunner, regardless of the weapon on which he is employed. And although the ATGM may appear complex, so did the M1 rifle and the 105 recoilless when they were introduced. It only takes a little time and experience to learn the weapon and what it can do. The ATGM is not unique in this respect.

There is also a common misconception that you must be a PhD (or practically so) to fly an antitank guided missile. The fact is that we are not competing for the draftee scientists that larger missile systems require. A few simple prerequisites are:

20/20 vision, uncorrected
Emotional stability
Hand-eye coordination
Leadership potential

In general, these prerequisites are those desired by a commander for a gunner on any of his crew-served weapons. So it takes no "Superman" to be an ATGM gunner. In our experience at the U. S. Army Infantry School, we have turned out a lot of fine gunners who were just plain, every-day, American soldiers. And we have tested many of these personnel under rugged combat-like conditions and they have hit the mark. This is a reminder, I suppose, that we should also not sell the American soldier short.

There is one other consideration which should be mentioned regarding the ATGM. Detractors point out that the missile will not be fully effective in jungle areas or in dense foliage. Of course, I will concede this point, remarking only that this is generally

LT HARRY E. WARNBERG enlisted in the Army in 1953 and served as a squad leader with the 136th Infantry Regiment. He later became a platoon sergeant and then a first sergeant in this same unit. In 1957 he was assigned to Headquarters, 3d Infantry Division and then to OCS at Fort Benning. In 1958 he received the Patterson Award which is presented annually to the outstanding OCS graduate of the year. Lt Warnberg was, until recently, assigned as an instructor with the Weapons Department of The United States Army Infantry School. He is presently enroute to an assignment in Germany.

not tank-type terrain anyway. In essence, if the terrain allows a tank to be there, it will also allow the SS10 to reach the tank.

Another significant point is that, according to the CGSC *Military Review*, "The manufacturer is reported to have sold about 28,000 of these missiles to 11 countries including France, the United States . . . West Germany, Italy, Sweden, Denmark, Norway, Israel, Canada, Great Britain, and Switzerland." Obviously all of these countries would not have bought a "pig-in-a-poke" (or at least not 28,000 of them).

Further, the *Military Review* notes that, "The manufacturer is reported to be developing the SS12, a larger version of the missile with much greater range. The SS12 is not to be wire guided and eventually may be capable of carrying a sub-kiloton nuclear warhead." This, I think, illustrates the final (and most compelling) argument for the ATGM: *logic* and *common-sense*. We must recognize that the SS10 is an *early* model of a small guided missile which provides us with only a *starting point* from which to progress to better types. Even with this early model, there are unlimited possibilities for refinement. We can readily reduce size and weight, and we can reduce cost through mass production. New and improved simulators are now being studied and evaluated with a view toward reducing training time, so this, too, looks promising. In time, it is expected that all of the limitations can be removed or at least significantly reduced.

The point is that we must take this time. Instead of sitting in the peanut gallery freely criticizing, we must instead bend our effort toward constructive and positive improvement. This weapon has promise. No, it has more than promise. The ATGM can *now* deliver a lethal payload to the target without burdening the battle group with the excessive weight which is characteristic of the larger conventional weapons. The guided missile can also deliver a shaped charge to a greater range and with more accuracy than any other means of delivery.

In adding up any evaluation of the ATGM, we must not "put all of our money on the first race." *Nor should we make a complete evaluation on the success or failure of an early model.* Let us instead consider the potential of the weapon based on the knowledge of its capabilities and how the limitations can be eliminated.

When we do this, we will find that the antitank guided missile is indeed worth the cost.

The opinions expressed in this article are those of the author and do not necessarily reflect official thinking of the Infantry School.

ATGM—The White Elephant

(Continued from page 45)

scores of varied psychomotor examinations, all of which are administered under ideal testing conditions, provide a measure of potential SS10 or 11 gunners. It is evident that the ordinary deftness of the average Infantryman is not enough to satisfy the adroitness required of ATGM gunners. And this, of course, is expensive. Any time the Infantry buys a weapon which the average American soldier is unable to master, it is costly. Recall the hills that have been held and the missions completed due to the ability of an ordinary Infantryman who could man a weapon other than the one with which he was usually associated. Thus we cannot afford weapons such as the SS10 or 11 which require of gunners the unusual and unique—be it physical agility or mental superiority. Studies of the personnel made available to the Infantry during WW II will refute the idea that the Infantry is going to be able to match complex weapons with the "average" American.

After the candidate ATGM gunner has passed the tricky finger-visual exercises, and if he is of average intelligence, he may be enrolled in an expensive training course. The course, which follows the accepted sequence of Army training, goes from the simple to the difficult. Introduction to the missile, crew drill, marksmanship training, technique of fire and tactical training are familiar terms common to missile Infantrymen. Uncommon, though, is the knowledge that even when fully trained, an ATGM gunner can never relax. To maintain proficiency, an SS10 or SS11 gunner must have *daily* appointments with the Cinetir or Simulator used throughout his initial training. (See *Infantry*, Oct-Nov, 1959)

"Simulate" has long been an overworked word of the Infantry. Broomsticks and stovepipes have served remarkably well in the task of drilling a recruit to become a soldier. Simplicity has been the rule of the Infantry training aids and Infantrymen have always used imagination to approximate equipment whenever it has been in short supply. The "Simulator" though, will defeat Infantry ingenuity; for where will the soldier be able to scrounge or reproduce electronic cabinets, control boxes or signal generators? And should we expect our economy to provide—for isolated training purposes—such a complex item costing approximately $8000? Wisely, the austerity-conditioned Infantryman realizes that wastefulness will result when such expensive training devices are purchased for a single training function. Yet the $8000 Simulator is a minor entry in the training expense debit column.

Consider the plush Cinetir at the bargain-counter price of $62,000. $62,000 for a single electronic mechanism to train Infantry antitank guided missile gunners and to assure through its use that their proficiency

Continued on page 48

is maintained! Extravagant? Yes! What other antitank weapons could be purchased with such a huge amount of money? You could have your choice of 17 complete 106mm rifles or 861 3.5-inch rocket launchers. It doesn't take much calculating to see that the Cinetir eats up a considerable number of $18.75 U.S. Savings Bonds. It is regrettable that the high-priced Cinetir does so little to help with the non-existent long-range antitank protection problems of the battle group and that it does so at premium prices.

There are some individuals, though, who say we do not need the regal Cinetir. It is strongly urged by many that the Cinetir phase of training be replaced with additional firings of the SS10 and 11. Currently, the SS10 training program allows each gunner to launch and guide a total of 13 missiles. If the Cinetir aspect were eliminated, then the number of missiles for qualification firing would be increased to 25. This appears to be an excellent approach and so it is—until the cost of the missiles is weighed. The average cost of the missile is approximately $1000. This is the most expensive ammunition item used by the Infantryman. It seems to be excessive to spend $13,000 for warheads alone to train one single soldier to perform one isolated task. Further, it seems to be unwarranted to propose to spend $25,000 to do the same thing. Multiply these figures by five, the number of gunners in the assault weapon platoon, and the training dollar sums become exorbitant. Compare this with the 12 rounds of 106mm HEAT ammunition used for gunner qualification: one round costs $45.00. A Total of $540.00 is expended during 106mm qualification firing. And this 106mm rifle gunner, or the tank gunner for that matter, does not require *daily* appointments with anything to maintain his proficiency. It's done on an *annual* basis.

After training an antitank missile gunner what do you have? Generally you have a "skilled" individual who has missed his training targets with a very high percentage of the missiles he has fired. This gunner, who launched his missiles during training over ground almost as clear as a golf course fairway, is well instructed tactically. He knows how to select a final firing position which is advantageous to his mission. He is quick to recognize that it takes him longer to kill a tank (even when he doesn't have one of the several common missile malfunctions) than any other antitank weapon gunner. He understands that the number of missiles immediately available to him is very limited because of their weight, size and bulkiness. He can fly a missile (if it is functioning properly) down a road, providing it is straight. Yet he cannot keep an SS10 over the road's center line. He requires, in addition to an exaggerated mask clearance, a 10° clearance in width for proper flight insurance. He does not have a 360° firing capability after he is prepared to fire. He believes that the enemy will be unable to detect his firing position, failing to recognize that the enemy has always met the challenge of weapons and will do so with the unconventional missile. He is a confident, loyal soldier—proud to be an Infantry missileman. Some facts, though, must be faced from a combat Infantryman's realistic point of view. Combat's costly toll will defeat the agile fingers of the high-priced gunners. The enemy will not need to expend much effort toward the antitank guided missile.

It is a known fact that there is always an element of fear in combat. This fear is exhibited by many soldiers in recognizable physical movements. Rapid breathing, jerky walking, slouched carriage and trembling hands are common anatomic reactions to incoming fires. The omnipresent threat of the unknown causes a haggard, wide-eyed tremor and nervousness. How will our Cinetir-skilled ATGM gunner perform in the starkness of daily combat? I, for one, do not believe that he will maintain a missile in a straight and undeviating flight for twenty seconds, when mortar and artillery fire crack within his launching area. The natural, uncontrollable, dodging reflex will be commonplace among ATGM gunners, and these muscular movements will be translated into an erratic flight, and finally—$1000 worth of missing missile.

The early ATGM shoppers were disillusioned by the DART, the American ATGM failure; doubtlessly they were also influenced by the successes that France had with the SS10. This missile was developed by the French and was widely praised and advanced in certain NATO circles. But few Americans reflected as to why the French Army had found a niche in their armament pantry for the SS10. The answer was this: it was the most *inexpensive* way for France to challenge the ever present hordes of continent-based Communist tanks. Lacking the capacity for extensive heavy tank production, the course of action selected by the French was quite correct. Further, the astute Frenchmen knew that most of the terrain falling within their area of responsibility was conducive to touch-controlled antitank weapons, and it generally permitted missiles to be visually observed and directed. Masses of gentle valleys, denuded heights and cereal growing plains typify the greater part of the potential combat areas of the French Infantry.

Such is not the case with the American. Potential combat areas such as Laos, Borneo, Finland or Alaska typify the vigorous, harsh land facing the American combat Infantryman. Admittedly, these places are quite different from the smooth, regular, cultivated areas of Alsace, Burgundy

CAPTAIN IRONSIDES is the nom de plume of an Infantry officer widely experienced in the Infantry weapons field. The author is a graduate of the Infantry Advanced Course and is currently assigned to USAIS.

and the dunes of the Sahara.

Thinking soldiers who have witnessed firings of the SS10 have been struck with the knowledge that the ATGM cannot be profitably or safely launched in regions that are forested or covered with heavy jungle foliage or lush vegetation. The demanding, costly ATGM is restricted to terrain which is free of onerous, flourishing growth. A broad, clear, fire-avenue is essential to the antitank missile's final success. The SS10 has no place in a fire fight occurring in cities or hedgerows. And, of course, the Infantry cannot afford the luxury of a weapon that defies utilization on other than land of table-top smoothness.

Proponents of the SS10 have praised it because it can be launched from a variety of mounts. This is a desirable characteristic, but we should not overlook the fact that it takes a well-trained crew 15 to 20 minutes to fire from a ground position. It is almost embarrassing to compare this time with the rapidity of action of the 106mm squad or the 90mm gun tank squad. Certainly the enemy is going to take advantage of a weapon which cannot profitably and rapidly engage a fleeting or surprise type of target. Additionally, from a cost basis, it would appear that a five man ATGM squad should be able to outdrill the four man 106mm rifle squad. However, such is not the case. In training, in personnel, and, in fact, in almost every area, we are just not getting enough for our money.

Is the antitank guided missile worth the cost? To calculate the price of the ATGM, add the total costs of gunner selection and training to the big limitations of tactical employment; then multiply by the constant factor of missile malfunctions, compensate for missile prices, and the net total—stated in the plainest economic language — is always the same: the ATGM is a missile myth and a dollar waste.

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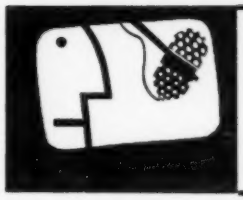

INFANTRY QUIZ

Answers on page 75

1. The size of a terrain objective assigned to a platoon should be:

(a) up to 500 meters in width.

(b) up to 250 meters in width.

(c) of width and depth not greater than can be seized in a single assault.

(d) large enough so that it may be further subdivided into squad size objectives.

2. The fire support coordinator for the Infantry division battle group is normally the:

(a) battle group S3.

(b) division artillery S3.

(c) heavy mortar platoon leader.

(d) commander of the howitzer battalion in direct support of the battle group.

3. The laying out and construction of field fortifications is the responsibility of the:

(a) engineer staff officer.

(b) battle group commander.

(c) commander of troops occupying the positions.

(d) engineer platoon leader.

4. The Geneva Convention of 1949 provides that in prison camps where there are no officers, the prisoners' representative is:

(a) appointed by the commandant of the camp every month.

(b) elected by secret ballot by the POW every 6 months.

(c) always the senior NCO.

(d) appointed by the senior NCO.

5. Wheeled vehicles cannot travel satisfactorily over flat terrain or roads when the depth of uncompacted snow exceeds:

(a) 25-30 inches.

(b) 12 inches.

(c) 5 inches.

(d) 20 inches.

6. The short-range radar (AN/PPS-4) teams organic to the battle group combat support company radar section are usually employed:

(a) in general support of the battle group.

(b) under control of the BG S2.

(c) by attaching them to the reconnaissance platoon.

(d) by attaching them to forward rifle companies.

7. How many forward observers are there in the weapons platoon of the Infantry rifle company?

8. What are the two techniques employed by tanks and Infantry using personnel carriers to advance in a mounted attack?

9. In the development of a battle group defensive position, engineers will provide:

(a) indigenous labor and transportation.

(b) technical assistance, hand and power tools, construction equipment and materials.

(c) troop labor and supervision.

(d) explosives for creation of crater type obstacles.

10. In planning final protective fires for the defense of a battle group position, for each available artillery barrage:

(a) a general location is designated by the BG commander and the exact location is specified by the supporting artillery battalion commander.

(b) a general location is designated by the supporting artillery battalion commander and the exact location is specified by the platoon leader of the 4.2-inch mortar platoon.

(c) a general location is designated by the fire support coordinator and the exact location is specified by the artillery observer with the forward rifle company in whose area the barrage is located.

(d) a general location is designated by the battle group commander and the exact location is specified by the commander of the rifle company in whose area the barrage is located.

DARKNESS . . . MUD and FALLOUT

You owe the next twenty reading minutes

to the men you may command—

They *must* survive on the nuclear battlefield.

by Capt Henry R. Shelton

FALLOUT will follow a nuclear detonation as surely as darkness follows daylight . . . and mud follows rain. The Infantryman—through necessity—has learned to live with and fight under conditions of darkness and in the mud. But can the Infantryman also learn to live and fight under conditions of fallout contamination? The obvious answer to this question is that he must—if we are to survive on the nuclear battlefield of the future.

Fallout is probably the most discussed (and least understood) problem that any commander may face in the future. An aura of mystery seems to surround this entire subject, principally because the radiation from fallout cannot be detected by the senses.

You can't see it.
You can't feel it.
You can't smell it.
You can't taste it.
You can't hear it.

However, it has one characteristic that brings fear to the mind of the individual who is not familiar with its behavior—that is—in sufficient dosages, it is fatal.

Fallout may be placed in a number of categories. In this article, however, the discussion will be limited to "militarily significant fallout"—or fallout of sufficient dose rates to affect tactical operations on the battlefield.

Before we can understand the application of fallout on the battlefield, we should know how it is produced. Essentially, fallout is the radioactive residue that remains after a nuclear detonation. When a tactical nuclear weapon is detonated in the air and the fireball does *not* come in contact with the earth's surface, this radioactive residue rises high into the atmosphere as part of the nuclear cloud. Normally, these particles spread over such a large area of the earth's surface that the dose rate in any one location is not sufficiently high to be of any tactical significance. The one exception to this is when the nuclear cloud stabilizes at an altitude *below* clouds that are producing rain. If this

occurs, the rain will collect radioactive material as it falls through the nuclear cloud and will deposit this material on the earth's surface in concentrated form which may be of tactical significance. This phenomenon is known as "rainout" and will occur only under unusual circumstances.

Militarily significant fallout, on the other hand, will result when the nuclear weapon is detonated at a point where the fireball comes in contact with the earth's surface. When this condition exists, the heat of the fireball vaporizes tons of soil, and this soil, in a gaseous state, rises into the nuclear cloud. As the cloud gains altitude and begins to cool, the gases begin to condense into small particles of soil. And as these particles form, they become intimately mixed with the other radioactive residue and begin falling to the earth. During descent, these particles are blown by the wind. So much radioactive material falls in this manner that radioactivity sufficient to influence tactical operations may be concentrated in very large areas downwind from the point of detonation.

For example, in the 1954 test series, Operation Castle, Bikini, a bomb reported to have had a yield of 15 megatons contaminated an area of 7000 square miles with sufficient fallout contamination to cause fatalities to anyone exposed and remaining in the area for 24 hours. This gives just a small inkling of the potential of fallout on the battlefield of the future.

Of course, the total area of fallout depends on many factors including: the yield of the nuclear weapon; the height of burst (whether the fireball barely touches the earth or the weapon is detonated below the surface); the height at which the nuclear cloud stabilizes; the direction and speed of the winds from ground level to the top of the nuclear cloud; and the type of terrain at or below the point of detonation. Considering the above factors, the significant fallout area from surface burst nuclear weapons will be larger than the lethal area of other effects of the detonation. Consequently, fallout has the potential of causing casualties to quite a distance beyond the radius of casualties from blast, thermal radiation and initial nuclear radiation. Since fallout may persist, it can deny extremely large areas to unprotected troops for limited periods of time, and it can disrupt logistical and administrative operations by inhibiting the use of towns, roads and other communication lines.

Inasmuch as fallout has such a wide reaching potential — either against the enemy or to hinder friendly operations—there is a requirement for a prediction that will give the commander an indication of an area of fallout. Ideally, this prediction would give the commander both an area of fallout and dose rates within the area. The Armed Forces Special Weapons Project prediction method, which was used by the Army until last year, attempted to give these answers; however, in tests, this system proved unreliable for use in tactical operations. In December, 1958, DA Training Circular 101-1, *Prediction of Fallout and Radiological Monitoring and Survey,* was published and distributed to the field. This circular explains in detail the fallout prediction method for field army use. Basically, this method of fallout prediction produces an "envelope" representing the area that should contain all the militarily significant fallout resulting from a given nuclear detonation. This method *does not* attempt to predict dose rates within the fallout area. Refinements of this method will give probable arrival times for fallout within the area and a "hot line," or probable line of highest dose rates, downwind from ground zero. The basis for constructing the fallout envelope is the "wind plot," which is a diagram to scale of the wind speeds and directions in a given area. The envelope itself is constructed by applying a factor to the wind plot. This factor is determined by the yield of the weapon, the height of burst and the height of the stabilized nuclear cloud.

Of course, the present method of fallout prediction may be used for either prestrike or poststrike prediction; the source of the weapon (i.e., friendly or enemy) determines the staff responsibility for making the prediction.

For example, at division level, the intelligence officer has general staff responsibility for the prestrike prediction of fallout that could result from an assumed surface burst *enemy* nuclear weapon. Based on this prestrike prediction, alternate plans may be prepared, and protective measures may be taken by subordinate units. Additionally, this prediction may be the basis for planning of radiological survey of the area. This type of information will be disseminated through normal intelligence channels.

On the other hand, the operations officer has general staff responsibility for the prestrike prediction of the area of fallout that could result from the employment of *friendly* nuclear weapons. Information of this nature will be disseminated through operations channels to all agencies and headquarters which require it for planning.

For poststrike prediction of an *enemy* nuclear weapon detonated as a surface burst, the intelligence officer has general staff responsibility for predicting the area of fallout. This prediction will be based on actual data and will be used as a basis for alerting units of possible fallout; it will also serve as a basis for radiological survey.

The operations officer has general staff responsibility for poststrike fallout prediction of *friendly* surface detonations. This would be primarily a refinement of the prestrike prediction (which he makes) using actual yield, cloud dimensions and wind data at the time of detonation. This information would be disseminated to all agencies that might be affected.

Again, it must be emphasized that

FALLOUT — *Continued*

the predicted envelope used by the intelligence or operations officers only indicates an area that will contain all the militarily significant fallout resulting from the detonation. Some areas within this envelope will not receive any significant fallout, whereas other areas will be highly contaminated. How, then, can we determine the actual dose rates within the area?

These actual dose rates can be determined only by the use of radiation measuring instruments in the fallout area. And the actual area covered by various dose rates can be established only by an organized radiological survey of the area in question. The G2 has the responsibility for planning radiological survey; the chemical officer, working under the staff supervision of the G2, carries out the detailed planning of this survey. Additionally, the chemical officer operates the radiological center (RADC) for the division. At the battle group level, the S2 coordinates survey operations, maintains a current radiological situation map and disseminates all fallout information.

Once this fallout information is passed to subordinate units, it then becomes a matter for commanders and the individual soldier. Of course, it is the responsibility of all commanders and leaders to provide the maximum protection from fallout, consistent with the mission, to all personnel under their supervision. To fulfill this responsibility, however, much depends upon the individual soldier.

First of all, each individual must realize that the radiation from fallout is given off by the particles that fall to the surface and that the amount of this radiation is reduced as it passes through materials such as steel, concrete and earth. For example, a shelter with three feet of earth cover would reduce the dose rate inside to only 1/1000 of the dose rate outside. A foxhole would reduce this dose rate to about 2/10, and a tank to about 15/100.

Therefore, we can conclude that, with sufficient warning, an individual can protect himself to some degree. In addition to protection, there must be some means of determining when fallout actually begins. Under some circumstances, this may be assumed by the arrival of a powdery dust after a known surface detonation. However, the only foolproof way is by use of the survey meter which is organic equipment for each company-size unit. When fallout arrival is confirmed, the individual must realize that he should take additional action to minimize the fallout hazard.

Of course, the first action is to take advantage of any protective cover that is available. Additionally, he should endeavor to keep the fallout particles away from his body during the time that the particles are actually falling. This is done by covering all embrasures and entrances to bunkers, placing some type of cover over the foxhole or "buttoning up" the tank or personnel carrier. If an individual finds himself in the open when fallout arrives, he should cover up with a poncho or shelter half. The covering will not fend off all radiation, but the fewer particles that actually contact the body, the better.

The duration of time during which fallout particles will continue to fall at a given point depends on the size of the weapon producing fallout and the speed of the winds in the air. This time is equivalent to the time it takes the prevailing winds to blow the nuclear cloud past a given point. For a 20 KT weapon with average wind of 15 mph, this would be approximately 15 minutes; for larger yields or for less wind velocity, the time would be longer.

It is a reasonable assumption that all fallout has arrived once the dose rate indicated by the survey meter has leveled off. Again, once the nuclear cloud has passed, all troops must be informed and additional action must be taken.

During the phase when fallout is actually on the ground, each individual should continuously decontaminate himself and equipment. This can be accomplished by brushing or washing away all dust particles. Also, hasty fortifications, such as foxholes, should be scraped down to fresh earth, and all excess dirt should be thrown out of the foxhole.

Logically, it would appear that as soon as fallout has passed, the best course of action would be to immediately move out of the fallout area. This, however, is not always true. Movement under these circumstances can be quite hazardous in that, inadvertently, a move might be made to or through an area of greater dose rates. It is for this reason that no

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move should be undertaken unless the entire radiation situation is known.

This points to a very important part that the unit monitors play in determining the radiation situation and in radiological survey. All units should immediately report the first indication of fallout and should continue these reports whenever the radiation dose rates change. Only through this procedure can the radiation contamination map be plotted.

Once the radiation situation is known, computations can be made to determine the best course of action. Factors that will have to be considered are: the mission; total dose that the unit is exposed to at the time; prior exposure to radiation; the degree of protection that the troops have; available routes to evacuate the area; distance to an uncontaminated area; and means of transportation.

To show how these many variables must be considered prior to moving a unit, let us consider a battle group in a hypothetical combat situation. Assume that three of the companies are located in a contaminated area in which the fallout arrives one hour after detonation. The dose rate is 200 roentgens per hour and radiological survey indicates that it is 15 miles to the closest area of negligible radiation. With each of the companies afforded different degrees of protection, many possible courses of action become available. Some of the possibilities—and some of the results—are indicated in Figure 1 below.

From the comparison of these results, we can draw several conclusions:

Immediate movement out of a fallout area is not always the best course of action; all other factors being equal, any means of increasing the rate of movement out of a fallout area will reduce the total dose; the more protective cover provided prior to arrival of fallout, the greater the reduction in the total dose received by the individual.

Understandably, there are no hard and fast rules to give you the best course of action for all fallout situations. Each situation must be considered separately before a sound decision can be made regarding operations within a fallout area. However, the fact is that by an understanding of the aspects of fallout and the proper application of prediction, protective measures, radiological monitor and survey, and timely orders, the Infantryman can survive on the battlefield.

But this survival will not come easy. It will only result if action—positive action—is taken by every leader in the chain of command. This action must first include a fundamental understanding by the leader of the operational aspects of fallout. Secondly, the leader must be assured that every unit or individual under his supervision has been trained in the procedures required for successful operations under conditions of fallout contamination.

When the Infantryman is properly trained to operate under these conditions of fallout, he will then regard this effect much as he does darkness and mud—that is—they make his job more difficult and demanding, but do not prevent him from accomplishing his mission.

	Co A (No Protection)		Co B (In Foxholes)		Co C (In Foxholes with 3 Ft of Earth Cover)	
Course of Action	Dose Received in Roentgens	Probable Results*	Dose Received in Roentgens	Probable Results*	Dose Received in Roentgens	Probable Results*
1. Move at once, on foot.	180	D	180	D	180	D
2. Move at once, by 2½ T trucks.	40	A	40	A	40	A
3. Move at once, in personnel carriers.	16	A	16	A	16	A
4. Wait one hour.	120	C	25	A	Less than 1	A
5. Wait one hour, then move on foot.	220	D	125	C	100	B
6. Wait one hour, move in 2½ T trucks.	140	C	45	A	20	A
7. Wait one hour, move in personnel carriers.	128	C	32	A	8	A

*
A—No obvious effects except possible minor blood changes.
B—5-10 percent sick, no serious disability.
C—25-50 percent sick for one day, no anticipated deaths.
D—Nearly all personnel sick, 20 percent deaths in 2 to 6 weeks.

Figure 1. This chart demonstrates the folly of blindly dashing out of a fallout area and indicates the protection which normal fortifications offer.

Additional Reading Material

1. Department of Army Pamphlet No. 39-1, Nuclear Weapons Employment, May 1959.
2. Department of Army Training Circular No. 101-1, Prediction of Fallout and Radiological Monitoring and Survey, December 1958.
3. Department of Army Field Manual, FM 21-40, Small Unit Procedures in Atomic, Biological, and Chemical Warfare, November 1958.
4. Department of Army Field Manual, FM 21-41, Soldier's Handbook for Nuclear, Biological and Chemical Warfare, December 1958.
5. Department of Army Pamphlet No. 39-3, Nuclear Weapons Effects, March 1957.

This department gives every soldier an opportunity to "sound off" on a wide variety of subjects. It provides an outlet for thinking which need not conform to doctrine or policy. We are interested in constructive ideas — well-conceived and concisely expressed — which challenge or inform. Articles will be paid for at regular rates.

Staff OPERATOR'S Procedure

by Major Chairborne

EVERYONE says, "Staff duty is easy" —this is what everyone says, but to use an old cliche, "It just ain't so."

To be a really "red-hot" staff officer requires a lot of work—and a lot of knowledge. But sometimes, staff work also requires a lot of finesse. In the words of one of my contemporaries, "You gotta' be an operator."

The following points (which we might call a Staff Operator's Procedure) are therefore furnished for the information and edification of staff officers—past, present or future. Here they are:

1. If it is bad news, send your assistant to the CO with the report. Even if the CO's driver ran into the General's sedan and wrecked the jeep at 2300 hours, this doesn't mean that you should give the news to the old man right away. It can wait until morning and your assistant can handle the mission (You should arrange a trip to the field early next morning).

2. If it is good news, take it in yourself. Notification that the latest staff study—over the CO's signature —was wholeheartedly endorsed by the next higher headquarters is of great significance and the CO should be informed immediately—by you. Pretty soon the CO will associate all good things with you (You hope).

3. Never say "No" and indicate it can't be done. Better to change the subject or tell the old man you'll "check this out." Or you can say "Yessir," and then come in later and give a plausible reason why it cannot be done.

4. Never appear to be thinking ahead of the CO (even though you must and do). Remember the phrase, "Colonel, I don't know where you get all of these new ideas" (He knows, but don't remind him).

5. Deliberate (or appear to) before giving your boss the answer. Some people really don't know the answer, but by deliberating somewhat

MAJOR CHAIRBORNE is a pseudonym for an experienced staff officer (non-operating type) who is currently assigned to the Infantry School.

they may create the impression that they are deep thinkers.

6. Submit any requested recommendation later, even though you have a good plan in mind. This will encourage the CO to think that you are indeed a most thorough as well as deep thinker (You've got to hand it to Smedley, he never rushes into anything).

7. Always stress your desire for troop duty. You love troops and there is nothing like command. Keep asking for it—this automatically means you'll never get it (Be sure there is no vacancy).

8. Always complain about officers who do not wish to accept responsibility (Check first with your friendly S4 and make sure there is no property M/R for your signature).

9. Select an intelligent assistant. When you report the results to the CO (and if the job turned out well) say, "Yes, we worked pretty hard on it." If the job failed, you can say, "Well, I gave that to Smedley and he let us down. I guess I should have given him a hand on it."

10. Chew out subordinates in an impressive manner even if (or especially if) you are the one who has "dropped the ball."

11. Then there is the matter of recreation and athletics; if you are considerably younger than the CO, do only a little better on the PT score. If he plays golf, golf is the game. Stress his qualities and comment that he must have come from a *really* tough outfit (that is really an indirect form of flattery). All people like to be *from* a hard school of one kind or another.

12. Give the CO the credit. It impresses others as to your loyalty. And besides, he makes out your efficiency report.

13. Get yourself chewed out instead of the CO. After all, your "shoulders" should be pretty broad after all the time you've been sitting behind a desk.

14. Fight for a command position —and when you get it, look around at your staff. If they fit any of the descriptive terms above—get rid of them. If you don't bounce them (or renovate them) you'll find yourself saddled with a bunch of staff "operators" rather than an operating staff.

The opinions expressed in these articles do not necessarily reflect official thinking of the Infantry School.

Summer Training for USAR Schools

by Capt Maurice D. Walsh, Jr.

OVER THE YEARS we've had many grandiose schemes for improving the Reserve. Some have proposed a complete reorganization and others have said we need more armories (or fewer armories) or more equipment (or less).

With all of these grand schemes, then, I feel somewhat like a pebble on a mountain when I make my modest proposals to improve the Reserve. What I have to say is certainly not earth-shaking since it applies to only a few thousand Reservists; nonetheless, I think it should be said.

What I have in mind is this: when the USAR School students attend their annual summer encampment at an Army Service School (Infantry, Artillery, Command and General Staff College, etc.) to climax a year of study, why wouldn't it be possible to receive the bulk of instruction from *Regular* Army school personnel? I (and many of my contemporaries) have pondered over this question since our last summer training period. While summer training was effective, I couldn't help but think how much more effective it would have been had we received almost all of our instruction from active Army instructors.

We have nothing against fellow Reservists who are instructors—far from it. But we know (and for that matter, so does the Reservist-instructor) that the Regular Army man is certainly more abreast of the latest developments. When the "Regular" describes the effects of a new weapon, chances are that he has fired the weapon and knows the details of how it operates. Such is not the case with the Reservist. He has probably "seen a picture," or "read a manual" or "gotten the scoop from the staff"—and this is the basis for his instruction.

The list of examples on the above score could be almost endless; the Reservist-student is well aware that the Reservist-instructor probably knew (before an intensive cramming session) as little as he did about the subject. When the Reservist then takes the platform, it is often evident that he is repeating facts learned in a hurry without a background appreciation of the "whys" and "wherefores."

I have spoken to service school faculty members who have drilled Reservist-instructors from nine to eleven hours in order to enable the Reservist to "pitch" a class. Wouldn't it have been more effective (and more economical) to get the word straight from the service school instructor who teaches this subject all year long?

My second proposal for improving the Reserve concerns getting the troops *into* the hot sun—particularly during summer training. If we can increase the practical and reduce the theoretical training during this period, I believe we'll be money ahead.

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As I reviewed my last summer's training schedule, I noticed that ten hours were devoted to communications. Of this, only one hour was practical work. The rest of the time was spent in dim classrooms examining brightly colored diagrams of communication nets, TOEs of signal equipment, etc. As you can appreciate, we could just as easily have studied nets and TOEs at our home stations. What we couldn't do at home (not having the time, space or radios) is operate radios in the field and practice setting up communication nets under actual field conditions.

Of course, this story could be repeated in many other fields. The important point to be remembered, I think, is this: we need more practical work (including firing of all weapons), more live demonstrations and more field exercises.

I recognize that there are many valid reasons why my two proposals have not been adopted in the past. But, by the same token, I question whether these same reasons would hold valid in the future. Can we say, "The Reserve should be self-sufficient," or "This is what the schedule calls for," and dismiss the considerations of cost-economy and effective training? I think not.

After all, the Regular Army can more effectively show us how helicopters resupply a unit or how artillery should be put on target. And you can show it being done in the field. All the training films we can see at home (or during summer training) won't impress us nearly so much. You can also show us new armor tactics, new staff procedures and new equipment as a part of our USAR School training and this will obviate the need for our returning in a year or two to take the short branch-refresher course. And if you bring us "out in the sun" for more practical work, live demonstrations and field exercises, we can then polish up what we have learned. Then the "Ready Reserve" will be in fact, what it is in name—READY.

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Dial 112 for Everything

by Lt Clark W. Hastings

UNFORTUNATELY, it sometimes seems that we do exactly this. To do any job in the heavy weapons field, we "dial 112"—We call on the ubiquitous Infantryman (MOS 112) to fire an SS10 missile, operate a radio, drive a truck (several types), serve as an FDC computer, fire a mortar and do a few other miscellaneous (but critical) jobs.

On the surface, this might seem like an inconsequential matter, but if you dig deep, it's another story. In the combat support company, for example, "dialing 112" can bring some unexpected (and disastrous) results.

In the combat support company TOE we find that MOS 112 applies to 25 different jobs. These range from radio telephone operator to light truck driver, chief fire direction computer and ammunition bearer, to name a few. This being the case, a commander could conceivably requisition a 112 (computer) and receive a 112 (driver) or 112 (ammo bearer). Similarly, a rifle company needing a light truck driver in the weapons platoon could possibly get an assault weapon gunner or a fire direction chart operator (all of whom have the same MOS).

Aside from giving the personnel officer "fits" (and the company commanders ulcers), this problem of "dialing 112" has another disturbing facet. When we categorize all heavy weapons Infantrymen under a single MOS, we are prone to consider the Infantryman as a "Jack-of-all-trades." We are led to believe that this man should be able to do any and all of the heavy weapons jobs. However, when you consider what this entails, it is obviously a training impossibility. To resolve this, then, I propose that we recognize that there are many types of heavy weapons Infantrymen —and most are specialists in their own field. Logically, the MOS 112 must be broken down into several MOSs which facilitate getting the right man for the right job.

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SALVAGE THE BLIND WARRIOR

by Henry E. Kelly, Col, USA (Ret)

With a little effort and no cost, we can provide effective fire through the fog of war.

It is generally agreed that it would be fatal to equip Infantry units with weapons which can be made practically useless at the will of the enemy. Nonetheless, this is the paradoxical situation in which we find ourselves today.

Realistically we can expect that, in any future war, most attacks will be made under conditions of limited visibility. This is primarily because limited visibility (natural or man-made) reduces an attacker's exposure to nuclear weapons; additionally, it complicates the defender's problems by ruling out his traditional advantages of observation and long fields of fire. Logically, then, we can't expect an attacker to face the deadliness of a preplanned, coordinated defense when, with a bit of well-placed smoke, he can wipe out the defender's preparation and force him to fight "blind." And even if the defender uses illuminants or infrared, fog or smoke will make them practically worthless. So the limited visibility attack is a very probable tactic on the future battlefield.

Yet, oddly enough, we are not fully equipped to face this tactic. Our basic Infantry weapons, the shoulder and bipod small arms, are only

Figure 1. The individual sector is marked to control the weapon barrel during traverse.

marginally effective once visibility is lost. And since over 84 percent of the rifle company is armed with these weapons, we find our frontline effectiveness is seriously reduced without some provision for prearranged, indirect grazing fire by shoulder small arms. Despite this fact, we have no such system or technique in effect today.

Under conditions of limited visibility, direct fire of even approximate accuracy is limited to ranges of 25 to 35 yards. This limits direct fire to the final stages of the hostile assault —the time when the attack has already penetrated the protective wire and is within range of the more effective close-range area weapon, the fragmentation grenade. Of course, tripod small arms can still fire on their predetermined lines, but the number of these weapons has been reduced to only six per rifle company while the frontage defended has been greatly increased.

Obviously, then, if flat trajectory shoulder weapons are to constitute the basic weapons of the Infantry, there must be some method of employing them effectively under conditions of poor visibility. For even with improved sights such as the multilite, shoulder weapons are presently of very limited use in the direct fire role when men can't see to shoot.

To resolve this, we must fully exploit the potential of prearranged indirect grazing fire by shoulder small arms. One method was formerly prescribed in the October, 1951 edition of FM 23-5. Fires of this type were successfully employed by some units as recently as the Korean War, although limited training emphasis prevented wide use.

However, the current edition of FM 23-5 omits the grazing fire procedure and further states, "As a general rule weapons are not fired until targets are visible." This prohibition is accompanied by the probable explanation that "illumination is used extensively to locate the enemy." Unfortunately (as mentioned earlier) under fog or smoke, illuminants and even infrared are practically worthless.

In spite of the deletion of prearranged grazing fire procedures from the current technique manual, the more recent (January, 1959) FM 7-10, *Rifle Company, Infantry and Airborne Division*, under "Conduct of the Defense at Night," prescribes that riflemen and automatic riflemen will use "stakes set up during daylight to assist them in covering their assigned sectors. Hand grenades are used to supplement other fires as the enemy gets close to the position."

To attempt to resolve this apparent contradiction, a method of limited visibility defense which has been successfully used in combat in World War II and in Korea is described below. There are doubtless other equally effective methods, but this one requires only materials and tools likely to be at hand, such as ammunition and ration boxes, tree limbs, engineer or locally cut stakes and the intrenching tool or bayonet.

During good visibility each man armed with a shoulder or bipod flat trajectory weapon selects that portion of his squad's sector within which level or uniformly sloping ground permits the achievement of grazing fire. (Any defensive position lacking at least a 100-yard field of fire over

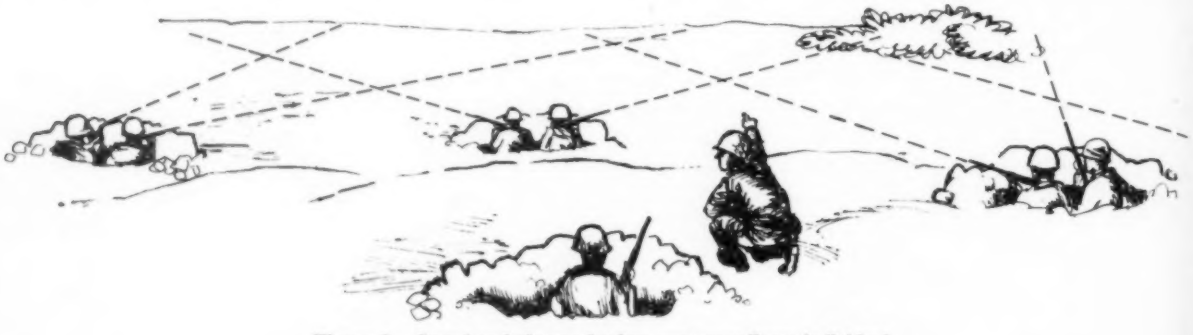


Figure 2. Squad and platoon leaders must coordinate individual grazing fire sectors to ensure effective frontline coverage.

level or uniformly sloping ground in critical directions cannot be considered good choice of ground.) The lateral extent of this individual sector for grazing fire is then marked using any available means which will contact the weapon barrel during traverse (Figure 1). Stakes, large stones or boards from boxes are suitable. Meanwhile, squad and platoon leaders verify and coordinate these individual grazing fire sectors to ensure effective coverage of the unit's sector (Figure 2).

Next, the critical matter of individual weapon barrel elevation is established. Men work in pairs during this procedure, with each helping the other to establish his grazing fire barrel elevation. Before beginning, they gather the material to be used in fixing the weapon's position. A log four to six inches in diameter makes a good base for the forward support. However, ammunition or ration boxes or other reasonably smooth, fairly heavy substitutes will suffice. This base is placed in position covering the firing sector in question (Figure 3).

The firer then selects a ground level aiming point which marks the far limit of the grazing fire sector in terms of range. This may be a bush, a bald spot or a rock where a change in slope marks the limit of grazing fire. If the protective wire has been installed, a point low on one of the stakes can be used. With sights set to hit the aiming point, the firer lays upon it. Maintaining this lay, the helper carefully establishes the weapon supports. The log or other main base supports the weapon at the forward hand guard just behind the stacking swivel. Short stakes driven into the ground prevent lateral movement of the log. A slight depression is scooped out for the toe of the weapon stock, (Figure 4). In this depression is driven another stake, though a rock or piece of board can be used if necessary. This is to prevent the toe from digging into the ground when firing. Behind the butt of the rifle another stake is driven to absorb the rifle's recoil, since the rifle

Figure 3. A log will provide a good base for the weapon's forward support.

at no time touches the firer's shoulder. By trial and error the exact lay is achieved, with changes being made by depressing or raising the toe of the stock. Whenever the tactical situation permits, the laying is verified by ranging in, preferably at both extremes of the contemplated traverse. It should be mentioned here that, although grazing fire within a selected sector is the usual case, point targets can also be prearranged whenever points of outstanding significance exist.

Once the flat-trajectory limited-visibility defense has been laid out, the squad's curved-trajectory (grenade) limited-visibility defense is established to fill in the areas where close-in defilade prevents the achievement of grazing fire. Still under full visibility, the squad leader indicates these defilade areas to the specific men assigned responsibility for covering them. The assigned men then make arrangements to cover them in the event of limited visibility attack. The lateral limits of the area are marked (as for flat trajectory weapons) in such a way that markings will be visible to the grenadier under limited visibility. Dependent upon the range, provision is made for hand or rifle grenades. Where rifle grenades are to be used, stakes are emplaced to mark butt location and barrel elevation. For hand grenade targets, mental or written note is made of the distance to the target. Where the situation permits, ranging throws can be made using suitably sized rocks. Finally, any mortar or other weapon concentrations can be planned so as to best ensure a coordinated limited visibility defense. (Continued on Page 60)

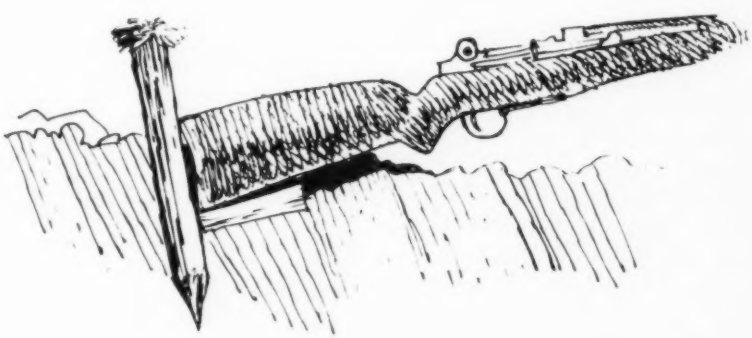


Figure 4. A board and a stake provide a solid support for the butt of the stock.

BLIND WARRIOR CONTINUED

Of course, the layout of the protective wire should also be carefully coordinated with the limited visibility defense. Additionally, antipersonnel mines, noisemakers and illuminants are all tied into the defensive scheme. When this is completed and the communications are in, the limited visibility defense is ready.

Even with this defense organized and in position, it must be realized that little or no command control exists in limited visibility combat. When the visual range is limited to 25 or 35 yards, the squad leader can see very little of his squad and even less of the enemy situation. This requires that advance plans be detailed and thorough and, insofar as possible, that these plans be reduced to a battle drill. To the extent that illumination is available, control difficulties may be reduced; however, it should be remembered that a unit prepared for the most adverse conditions is in the best position to profit from a less critical situation. And even when some illumination is available, weapons laid for grazing fire can be sighted for direction by visual means and can be kept on their grazing fire elevation so that they are still more effective than direct fire, in most instances. Where grenades are not available for the final defense, shoulder weapons can be picked up from the improvised support and used for direct fire. In this way we can improve on the improvisation, so to speak.

Such a defense takes time to ready, particularly with a relatively untrained unit, but this time can be greatly reduced by training. Without such advance preparations a small rifle unit (without visibility) is practically helpless when overrun; at least it gets scant profit from its selection of position and advance daylight planning.

In the final analysis, no defense is any better than the rifle units on the forward edge of the battle area. To give this small rifle unit the capability to fight effectively—even when "blind"—we must develop the techniques and procedures which will put *all* of the Infantry weapons to work *all* of the time. Only when we have done this will we have a truly effective limited visibility defense.

The opinions expressed in this article are those of the author and do not necessarily reflect official thinking of the Infantry School.

COL HENRY EATON KELLY (USA Retired) was commissioned in 1917. He then served as platoon leader, company commander and staff officer in the 77th and 1st Infantry Divisions in Europe. He later served with the 55th, 12th and 57th Infantry, and from 1939 to 1941 Colonel Kelly was with the 13th and 14th Infantry in the Panama Canal Zone. From 1943 to 1944 he commanded the 117th Infantry, 30th Infantry Division, in the U.S. and in Europe. In other varied stateside tours, Colonel Kelly has been both student and instructor at the Infantry School and the Command and General Staff College. Before retiring in 1954, he was president of the Infantry Board at Fort Benning. He is presently a military advisor to the Infantry Human Research Unit at Fort Benning.

(Continued from page 56)

Even if we adopt this recommendation, there is still one immediately troubling area which remains. In the mortar battery organic to our Infantry battle group, we find many different job titles and MOSs. These jobs change very little in the conversion to the combat support company's mortar platoon. The fire direction computer, survey computer and instrument operator are presently highly skilled personnel requiring a great deal of training. They have critical jobs and draw proficiency pay. When we reorganize, these people, having Artillery MOSs (they are not 112s in the mortar battery), will leave our unit. In the new combat support company we will then be unable to perform our mission effectively.

At the present time the mortar battery has among its occupation specialties MOSs 152 and 153. These are for Field Artillery operations and intelligence and Artillery surveyor, and they cover all aspects of fire direction and survey. To train personnel for the above jobs, enlisted men are sent to schools of eight and nine weeks' duration.

What happens, then, when we reorganize to a combat support company? Can we expect personnel having MOS 112 to perform these 152 and 153 duties proficiently? I think not. In the past, we have partially trained these people in the units, and it worked satisfactorily. But now this job is too complex and varied, and the units cannot possibly make trainees proficient in these fields; the complicated nature of the training militates against this.

In the future, perhaps, we will have schools in operation to train these personnel; at the present time, we do not. It would seem advisable, then, to retain the skilled mortar battery Artillery personnel in the Infantry combat support company, thus enabling us to maintain a high degree of accuracy (and efficiency) which is so necessary to combat effectiveness. If something is not done immediately on this problem, we may find ourselves sadly lacking if it becomes necessary to support the battle group by fire.

Indeed, this is one time when we must "dial the right number."

2ND LT CLARK W. HASTINGS entered the Army in August, 1952. After serving as an enlisted man for 6 years, he entered OCS and was subsequently graduated in December, 1958. Upon graduation he was stationed at Fort Sill, Oklahoma, and was assigned as a mortar battery platoon leader. He presently is assistant S3, 2nd BG, 30th Infantry.

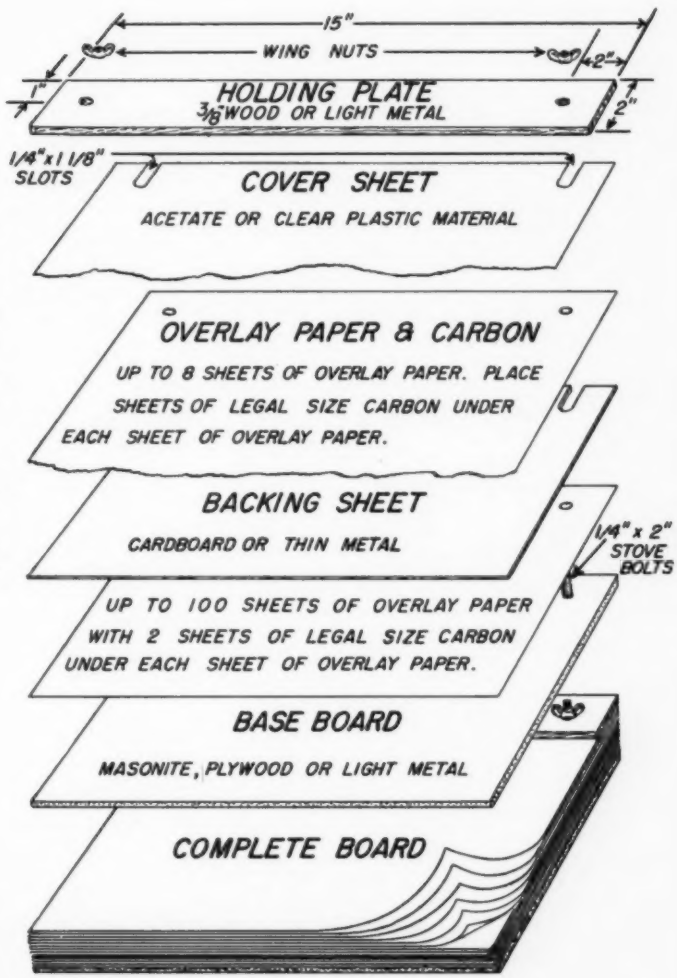
TRICKS OF THE TRADE

by Capt Gordon E. Williams

THE DAGWOOD BOARD

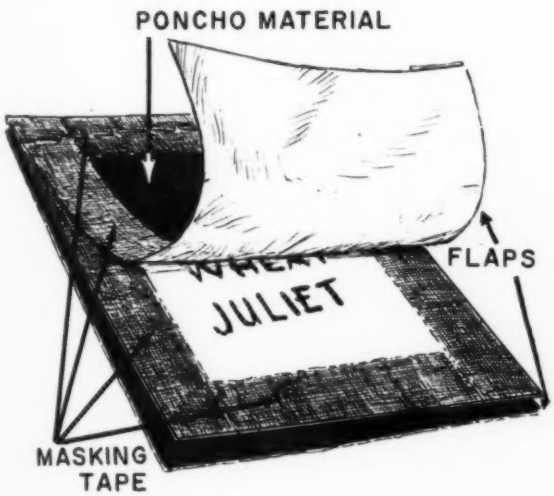
Rapid production of multiple copies of operation orders, overlays and similar data is difficult at headquarters not authorized mechanical reproducing machinery. The Dagwood Board (right) is a simple, readily fabricated device which can effectively do this job—and it has been successfully "field tested" under difficult conditions.

To prepare an overlay, place a map and the backing sheet under the top sheet of overlay paper and formulate the plan. Remove the map and reposition the backing sheet under as many as eight layers of overlay paper; then retrace your plan from the original overlay sheet using a ball point pen with heavy pressure. Your reproduction job is then finished. Remove the holding plate, cover sheet, sheets of overlay and carbon paper above the backing sheet and reassemble for future use.


15"
WING NUTS
42"
1"
HOLDING PLATE
3/8" WOOD OR LIGHT METAL
2"
1/4" x 1 1/8" SLOTS
COVER SHEET
ACETATE OR CLEAR PLASTIC MATERIAL
OVERLAY PAPER & CARBON
UP TO 8 SHEETS OF OVERLAY PAPER. PLACE SHEETS OF LEGAL SIZE CARBON UNDER EACH SHEET OF OVERLAY PAPER.
BACKING SHEET
CARDBOARD OR THIN METAL
1/4" x 2" STOVE BOLTS
UP TO 100 SHEETS OF OVERLAY PAPER WITH 2 SHEETS OF LEGAL SIZE CARBON UNDER EACH SHEET OF OVERLAY PAPER.
BASE BOARD
MASONITE, PLYWOOD OR LIGHT METAL
COMPLETE BOARD

THE LUMINOUS NOTEBOOK

The luminous notebook (left) has many uses. Distances, directions, call signs and check points, for instance, may be recorded on the acetate with grease pencil which can be easily seen in the dark against the glow of the luminous paper. A quick smear with the thumb can protect against possible compromise. Patrol leaders may also find the notebook handy for flashing prearranged signals in the dark.



PHOSPHORESCENT PAPER UNDER CLOUDY ACETATE

The Battle Group

Heavy Mortar Platoon

"Show me your automatic artillery!"

It was an unusual request, to say the least. Unusual because the request was made by a dazed and unbelieving enemy prisoner, and unusual because we couldn't provide an answer.

For we had no "automatic artillery"—all we did have (in this particular attack) were a few mortar tubes, a lot of ammunition, and a capability to quickly mass fires in response to fire requests.

Today, the battle group's "automatic artillery" capability is the heavy mortar platoon, with its six 4.2-inch mortars, far-ranging communications and counterfire sound-ranging equipment. While the mortar is not "artillery" in the strict sense of the word, the "automatic" description could still apply—for the heavy mortar platoon has a fire capability *greater than that of an artillery battery*.

This newly organized platoon is organic to the Infantry division battle group combat support company and is dependent upon it for administration, supply, evacuation and maintenance. The platoon consists of a headquarters, communication section, fire direction center and survey section, three forward observer teams, two firing sections and a counterfire squad. The platoon leader, a captain, is responsible for the tactical employment of the platoon and advises the battle group commander on the platoon's capabilities and employment. He is also responsible for preparation of the plan for heavy mortar fire support and for coordinating, and delivering, the fires of his platoon.

The liaison officer, a first lieutenant, is second in command of the platoon. Normally he is located at the battle group headquarters where he will pass to the battle group S2 all intelligence information received from the heavy mortar platoon fire direction center (FDC). In addition, he coordinates with the battle group S3 and fire support coordinator (FSC) on details of fire support.

Communications are Extensive

The communication section is commanded by the communication chief, a master sergeant. The section is organized and equipped to provide wire and radio communication to the platoon. This is a critical function, since

by Capt Rolfe G. Arnhym

Effective employment of the heavy mortar platoon requires an understanding of its capabilities and limitations.

the platoon normally employs three internal FM radio nets, one fire direction net, a counterfire net and a fire control net which is also the platoon command net. The platoon commander and liaison officer also operate in the battle group command net.

When the platoon occupies either a single platoon position or two section positions, wire is installed by the section wire teams and is expanded and duplicated as time and equipment will allow. When separated section positions are utilized, wire communication is established between section FDCs. Additionally, communication is established from the forward observers and the counterfire squad to the platoon or section FDC. Communication is also established from the platoon or one of the section FDCs to the liaison officer at battle group headquarters and to the FDC of the artillery battalion in direct support. Thus, when a target is beyond the range capability of the mortars, or when fires are required to supplement those of the platoon, this communication system will allow mortar forward observers to adjust the fires of other indirect fire agencies. Conversely, artillery forward observers can adjust the fire of the mortar platoon. To enhance this capability, mortar and artillery FDCs monitor each other's fire requests.

Fire Direction

The fire direction officer is in charge of the fire direction center and in this capacity coordinates and supervises its activities. When a target is reported he makes the decision as to whether or not the mortar platoon will fire the mission, the number of mortars to be fired and the amount and type ammunition to be expended. The nature of the target, the available indirect fire support, its capability to engage the target and the artillery fire plan are all considered before firing the mission.

The forward observer teams which normally accompany forward units advise the commanders of the supported units of the capabilities of the mortar platoon. On their own initiative, the observers move to positions from which they can maintain continuous observation over each supported unit's area of operation. Further, the observation posts for the 81mm mortar, 4.2-inch mortar and artillery are planned to ensure overlapping coverage of the area forward of and within the battle area.

The two firing sections each have three 4.2-inch mortars. The section commander, a lieutenant, receives his orders from the platoon commander except when the section is attached to another unit. In either instance, he will select the exact location of primary, alternate and supplementary firing positions within the area assigned. He may also be utilized to establish liaison with the FDC of the artillery battalion in direct support.

The counterfire squad of the platoon consists of the squad leader (chief operator), the counterfire specialist (operator), two computers and two plotters. For sound locating operations, the squad is divided into two teams which employ the AN/TNS-3 sound ranging set.

Counterfire information is the basis for effective counterfire operations and includes all information that contributes to the location of enemy close support weapons. This information is channeled to the counterfire center located in the heavy mortar platoon FDC. The counterfire center is established and operated by the counterfire operations sergeant who is presently assigned to the battle group headquarters company. This sergeant has the responsibility for collecting, evaluating and disseminating counterfire information and for maintaining continuous coordination with the battle group S2 and the radar section

The counterfire squad—a small unit with a big capability.

The observer spots the target . . .

leader concerning counterfire matters.

Planning Is the Keystone

The basis for effective fire support is planning, and heavy mortar fire planning begins at the rifle company. The rifle company commander, through the mortar and artillery forward observers, requests the indirect fire support desired. The coordination between companies for heavy mortar fires is accomplished at the mortar platoon FDC and results in a plan for heavy mortar fire support. These planned mortar fires are then integrated into the artillery fire plan at the FDC of the supporting artillery battalion. Heavy mortar and artillery fires are coordinated simultaneously at the battle group CP and at the FDC of the artillery battalion. The result of this coordination between the mortar platoon leader and the battle group FSC (the commander of the artillery battalion in direct support) is one plan—the battle group artillery fire plan. It is through this plan that maximum tactical usage of indirect fire support is secured.

The platoon is employed as directed by the battle group commander (normally in general support) and must be capable of rapidly shifting and massing its fires. Primary, alternate and supplementary positions are selected with this requirement in mind. The platoon may be employed in direct support of designated elements; however, only under exceptional circumstances is the platoon attached to another unit.

The Defense

In the defense, the mortar platoon is normally employed in general support—which allows maximum flexibility of fires and ensures ease of command control. In a general support role, the platoon will answer fire requests from the rifle companies and from heavy mortar platoon and artillery FOs.

A general position area for the platoon, located so that mortar fire will cover the most dangerous avenue, or avenues, of approach, is selected by the battle group commander. Within the requirements of their missions, mortar units are normally located near reserve elements, thus providing for some degree of security. The platoon leader selects the exact position and coordinates with nearby rifle company commanders to organize a defensive perimeter. This position includes the organic weapons of the platoon and takes maximum advantage of rifle company elements in the vicinity.

Coordination of the heavy mortar platoon and the direct support artillery battalion position areas is a responsibility of the battle group FSC. Whenever possible, the platoon is employed as a single unit. However, to provide increased coverage to the force on the COPL and to add depth to heavy mortar fires, a section may be employed forward of the FEBA. Upon withdrawal of the COPL this section will displace to its primary position. When operating as a platoon, the sections are normally positioned 200 to 500 meters apart, with the interval between individual mortars normally at 35 to 45 meters. Mortars may be readily positioned in small openings in woods and close to the base of hills to gain maximum cover and concealment. Other considerations in the location of position areas are space and concealment for vehicles, wire routes and a good road net forward and to the rear.

Heavy mortar fires during defensive operations include long range fires, close defensive fires, final protective fires and fires within the battle area. Each section can fire one barrage 150 meters wide or the platoon can fire a barrage of 300 meters. Employment of the platoon barrage is the preferred method for adequately covering dangerous avenues of approach. As in the selection of positions, the battle group commander designates the general area for the barrage; the forward rifle company commander in whose area the barrage is located selects its exact location. To give maximum protection against an assault, the near edge of the impact area of the barrage will be located not more than 200 meters forward of the FEBA. Whenever the mortars are not firing other missions, they are laid to fire the barrage with ammunition prepared and kept ready at the mortar positions for this purpose.

Ammunition requirements for defensive operations are estimated be-

fore the action, and when heavy expenditures are anticipated for which the normal replenishment procedure or basic loads will not provide an adequate supply, additional ammunition is made available at the mortar positions. Ammunition placed at mortar positions, however, must not exceed the anticipated expenditure at that position. Resupply from the battle group combat trains by the platoon ammunition vehicle is effected as ammunition is expended. A platoon ammunition distributing point is selected in the vicinity of the platoon's primary position area and is supervised by the platoon sergeant. Normally the platoon ammunition vehicle resupplies the mortars at the section positions. However, section leaders may dispatch squad vehicles to the platoon ammunition distributing point during periods of maximum expenditure.

In the defense the counterfire squad is normally employed under centralized control, well forward in one of the forward company defense areas, with high, open, even ground selected as the best location for the microphones of the sound ranging set. The terrain should allow a baseline of 640 meters to permit detection of enemy close support weapons up to the 3600-meter maximum detecting range. To more rapidly engage targets located by the sound ranging and radar sets during periods of limited visibility, the platoon leader makes extensive use of predetermined data from the battle group artillery fire plan. Also, if their use is authorized, illuminants can aid in quickly detecting targets and adjusting fire.

The Withdrawal

In the night withdrawal the heavy mortar platoon remains in position until the main body has broken contact and has begun its withdrawal. This is done to provide maximum support in the event the withdrawal is discovered. Normally, one section remains behind to support the battle group detachments left in contact. The platoon (–) follows the main body to the new defensive positions

. . . and sends the information to the FDC.

where, ideally, survey and wire laying will have been initiated prior to the withdrawal.

In the night withdrawal the counterfire squad remains in position until the first element, the heavy mortar platoon (–), begins its withdrawal. This is done since, once the withdrawal begins, a very limited capability exists to fire counterfire missions. Remaining indirect fire weapons have only sufficient ammunition to simulate normal activity and to assist the detachments left in contact in accomplishing their mission. Withdrawal of the counterfire squad with the platoon (–) will permit rapid preparation of the new positions. Although survey will be necessary and the squad will not be able to use its equipment immediately, the loss of time in establishing the site in the new position is not significant unless the counterfire squad is employed with security elements.

In the daylight withdrawal the heavy mortar platoon is employed under platoon control in a general support role. The platoon will normally displace by section to successive positions with continuous fire being placed on the enemy before and during the move. Extensive use of smoke is made to limit hostile observation. To provide this continuous fire support, the platoon leader must select position areas from which the platoon can fire in support of withdrawing battle group forward elements as well as the battle group covering force.

The counterfire squad normally withdraws with the battle group forward elements in the execution of a daylight withdrawal. Plans are made to survey sites on delaying or successive positions.

The Attack

For heavy mortar platoon planning, attacks may be placed in one of two broad categories — dismounted or mounted.

In a dismounted attack the platoon is employed to best advantage in general support and is positioned to best support the main attack. When required, the platoon may be employed in direct support of the unit making the main attack; additionally, the platoon may be attached—as in an independent task force operation.

During the attack the close support range of the heavy mortar is limited to 2750 meters, since this is the maximum range to which the heavy mortars may fire in *close* support of the

The plotters do their work . . .

. . . and a round is on the way.

CAPT ROLFE G. ARNHYM is a 1953 graduate of the United States Military Academy. After attending the Basic Infantry Officer Course, he became a company commander in the 145th Infantry Regiment at Camp Polk. He then served as aide-de-camp to the commanding general of the 10th Infantry Division until 1955, when he became company executive officer, and later company commander, battle group S3 and battle group S1 with the 87th Infantry in Europe. After attending the Infantry Officer Advanced Course in 1958, Captain Arnhym was assigned as an instructor in the USAIS Command and Staff Department. Captain Arnhym is a co-author of "Electronic Eyes and Ears."

assault and still have dispersion characteristics which are safe to advancing units. The urgency of a particular situation may, of course, require the battle group commander to accept greater risks.

The same procedures and coordination necessary in the preparation of the battle group artillery fire plan for the defense are applicable to the offense; additionally, in the attack, preparatory fires must be coordinated by the battle group FSC. Lifting or shifting of these preparatory fires will be coordinated with the commander of the company making the main attack. To support the initial stages of the attack, a position area is selected well forward to allow the platoon to participate in preparatory fires at ranges up to 5400 meters. Then, when preparatory fires are lifted or shifted, the platoon engages other known defensive positions or targets of opportunity discovered by the attacking units.

As the attack continues and mortar range limits are approached, forward displacement to preselected positions begins. Effective planning and reconnaissance, much of which takes place before the attack jumps off, will reduce the time the mortars are out of action. Since employment of the platoon (i.e., by section or platoon) is a governing factor, the size of platoon reconnaissance parties will vary. As a minimum, a reconnaissance party will include survey and communication personnel and the platoon leader, who will plan to use radio communication to order displacement. To assist in reconnaissance the platoon sergeant may be utilized. Normally the platoon will displace by echelon to subsequent positions to ensure continuous fire support. However, in the event attack elements move rapidly to the range limits of the heavy mortar, the entire platoon will displace at once; the platoon leader will then arrange with the battle group FSC for the artillery battalion to take over the missions of the platoon until displacement has been completed.

Ammunition requirements in excess

of the basic load are estimated, and as the attack progresses and ammunition is expended, the platoon supply vehicle is dispatched to the battle group combat trains for resupply. Upon return, the ammunition vehicle will resupply the mortars at the section positions with only anticipated needs being unloaded.

Before the attack the counterfire squad provides information on enemy weapons against which preparatory fires and fires during the initial stages of the attack are directed. During the conduct of the attack there is often insufficient time for the squad to install and survey its equipment, and the volume of friendly fire will generally be so great that effective target discrimination will not be possible. In spite of this fact, the counterfire squad will continue to collect counterfire information by using visual techniques and reports from elements in contact.

Since the mortar platoon is capable of rapid fire delivery and quick displacement, it is especially suited to many mobile operations. In such operations the platoon is normally employed in general support. When the battle group attacks on two axes the platoon normally supports the main attack. Because of range limitations, speed of movement and the requirement to render support quickly when situations develop, the platoon marches well forward in the column.

As the battle progresses, one section displaces while the other maintains continuous fire support.

The speed of movement made possible by mechanization makes it impractical to have mortars go into position to fire on targets which only momentarily impede the rapid advance of the column. However, the platoon leader will make a continuous estimate of the situation to keep the platoon prepared to go into position rapidly when the situation dictates. When the platoon is required to go into position, coordination is effected with the battle group FSC on position location and fires to support the attacking echelon.

The employment of the counterfire squad during mechanized operations is similar to that in dismounted attacks, with emphasis being placed on counterfire information prior to and during the initial stages of the attack. Communication, of course, will depend primarily upon radio in the mounted attack.

The heavy mortar platoon provides the Infantry division battle group with a highly flexible, close support, indirect fire capability immediately responsive to the requirements of the battle group commander. Thus, Infantrymen of future wars will continue to get the kind of devastating fire support that causes prisoners to ask—"Show me your automatic artillery."

You Know Where You Are . . . But . . .

Unfortunately, we don't—at least not all of the time. To ensure that you continue receiving *Infantry* on schedule, please keep us posted on your current address. If you are due for a change of assignment, let us know. If you desire, we can hold your copies of *Infantry* until you are settled.

by Capt Larry S. Mickel

The Marines Have Landed . . .

Marine concepts for air-mobile operations make full use of organic pathfinders.

IF THE Marines have landed there's a good chance that Marine Parachute Pathfinders landed *first!* And to continue the old cliche, if the situation *is* well in hand, the Pathfinders probably have a lot to do with that, too.

Just how important Marine Parachute Pathfinders are was well illustrated in a recent assault exercise against Vieques Island, Puerto Rico, in April, 1959. In this unique exercise, the Pathfinders selected landing sites within predetermined landing zones and provided the critical navigation and landing guidance for 19 helicopters employed in the air-mobile phase of the combined amphibious-air landing.

This exercise in Puerto Rico was unique in several respects: first of all, the unit conducting the exercise, the 12th Provisional Brigade, consisted of an Infantry battalion, tank and antitank units and, surprisingly, a Marine air group (-).

Additionally, the exercise was unique because the takeoff point—or area—was an aircraft carrier, the USS Boxer. The Boxer and four other assault ships had transported the Brigade from Camp Lejeune and provided the mobile base for this vertical and amphibious assault.

Aboard ship, the Pathfinders had participated extensively in the prior planning for the operation. When the attack jumped off, this participation in planning paid great dividends.

While the task force was still well offshore, the Pathfinders air-landed behind enemy lines to select specific landing sites within predetermined landing zones. Shortly thereafter, they guided the assault wave of helicopters in to commence the assault on Vieques Island.

The efficiency with which units were brought in facilitated the combat operations that followed. By bringing the right unit to the right place at the right time—and as a single unit—the Pathfinders gave the tactical commanders the control they needed to push off in the attack.

But this was not the end of the Parachute Pathfinders' mission. Instead of returning to their mobile base, the Boxer, the Pathfinders packed up their gear and continued on the second important part of their mission in the ground combat phase.

While the ground combat continued, the Pathfinders worked hand in hand with a company-size unit, mounted in H37 helicopters, which, under cover of darkness, hit isolated pockets of resistance. Although operating in darkness and in unfamiliar terrain, the Pathfinders were able to bring this unit to the point of decision with minimum difficulty.

This, then, was how it was done. In essence the Marine Parachute Pathfinders had proved themselves an indispensable element of successful vertical assaults. Had they not provided the guidance and control to this air-mobile element, it is doubtful that this degree of success would have been achieved.

Continued on page 70

by Lt Thomas A. Deemer
and Capt Larry S. Mickel

Can the Army Land Too?

Are Army pathfinders organized and equipped to support an air-minded Army?

THE INVASION of Sicily in 1943 provided a long-term lesson in the importance of Pathfinders to the success of air assaults. In this operation, elements of the 82d Airborne Division were given the mission of securing principal Sicilian airfields, and of providing general assistance to the 1st Infantry Division, which made a subsequent amphibious landing. Unfortunately, because of the absence of navigation and landing control, two airborne battalions were dropped 30 miles from their designated drop zone. Another jumped 55 miles from its designated drop zone. Still another battalion, assaulting on D-day plus one, lost 23 of its troop-carrier aircraft to Allied antiaircraft fire.

Soon after the invasion, the 509th Parachute Infantry began training a parachute scout company to provide the effective ground guidance that was lacking in Sicily. The parachute scouts' mission was to precede the main body of airborne assault forces to the drop zone and to vector it in with high-powered lights, smoke pots, flares and other guidance devices. Eventually, each parachute regiment organized Pathfinder teams with a similar mission of aircraft terminal guidance.

This training paid off immediately in the aerial assault on Palstum, Italy, where out of a total of 262 aircraft, 260 delivered their troops on predesignated targets—and with extraordinary speed. With minor exceptions, similar success was achieved in airborne assaults throughout the remainder of World War II and in Korea. The Pathfinder had become one of the essential members of the airborne team.

With the advent of a separate Air Force, Pathfinder guidance responsibilities were subsequently transferred from the Army to the Air Force, which in turn organized combat control teams. Helicopterborne operations, however, created a new Army responsibility for air assault. And without Army Pathfinders, the problem of Sicily—though on a different scale—reappeared. This, then, was the Pathfinder evolution.

Actually, our problems of ground guidance are more acute at present than during World War II. Now our aircraft fly close to the earth, and even in daylight this lack of altitude makes visual orientation extremely difficult. This problem is complicated by the fact that Army crews contain no navigators.

Moreover, landing masses of aircraft in a target area is inherently more complex than flying them over it. Coordination and timing are more critical, and confusion and departure from plan are more likely to occur without ground guidance.

It was apparent that the reactivation of Army Pathfinders was the only way to solve these problems. In 1954, the Chief of Army Field Forces directed the Infantry School to train company-grade officers and enlisted men in Pathfinder techniques and

Continued on page 72

THE MARINES HAVE LANDED

(Continued from page 68)

In adding up the worth of the Pathfinder in this operation, much credit must be given to the organization and equipment innovations which the Marines employ. A closer look at these innovations provides much food for thought.

"3-D" panels make landing site recognition quick and sure.

For example, in the equipment line, a three-dimensional panel is used to mark landing points. The "3-D" effect is created by pitching the standard beach marker panel in the manner of a shelter half. Standard tent pins and poles may be employed for this purpose. This arrangement is universally visible from the air, whereas a flat marker panel may be obscured by high grass or bushes and is, in any case, difficult to see in a low approach.

Unfortunately, this type of 3-D panel can be blown down by the 75 knots of rotor blast developed by H37 helicopters. To remedy this, inventive Marine Pathfinders have devised a pneumatic 3-D "panel" fabricated of vinyl plastic. This tetrahedron-shaped marker, which is now being produced commercially, is inflated with CO_2 cartridges in the same way a life vest is blown up. It may be secured to the ground by a single tent pin, allowing it to rotate about one of its corners when blown, or may be weighted with sand, rocks or snow in a zippered pocket. The pneumatic panel is reusable and collapses into a 1¾-pound package—comparable in weight to either the Army or Marine standard panels.

For aircraft terminal guidance during the hours of darkness, the Marines use two lighting devices not found in Army Pathfinder TOEs: a light gun and a glide-path indicator. The light gun, trigger-operated, has hand grips and folding front and rear leaf sights, which may be used to direct signals to particular points. A "flash-hider" also contributes to the directional capability. Signals, of course, may be transmitted in a variety of colors. The gun may be remotely controlled as well, using an extendable tripod and a remote switch.

To guide individual aircraft to a landing point, the Justrite glide-path indicator is employed, together with a "T" of white or red lights. The Justrite device is something like a common stop-light. It consists of three vertically arranged lights, each cowled so as to be visible only from a specific vertical angle. When the device is properly oriented, the incoming pilot can determine the correct glide path from the combination of lights visible to him. If he sees the amber top light, he knows his angle of approach is too steep, if the red bottom light, too shallow, and if the green center light alone, "just right." The simple "T" of lanterns indicates the proper direction of approach.

The Justrite system, which has been employed in carrier landings, provides excellent guidance for helicopter assaults at night. It is adaptable to tactical use and can land aircraft more accurately and quickly than ordinary signal lights.

In the organization field, the Marines also have a new twist. As presently organized, the Marine Parachute Pathfinders are organic to two *force reconnaissance companies.* These companies are the only airborne units in the Marine Corps. Though Marine Pathfinders are trained in both static and free-fall techniques, parachuting is only one of their means of delivery. Underwater breathing apparatus may be used in amphibious air-mobile as-

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saults. Additionally, ship- or helicopter-launched rubber boats may be employed. Experiments in rope descent from hovering helicopters have also been made.

On the conceptual side, the Marines consider their Pathfinders air-units, not—in clear contrast to the Army—as ground-units. Marine Pathfinders, in consequence, are responsible to air-unit commanders, not to troop commanders, and this arrangement materially increases the smoothness with which landing operations are run.

Marines are convinced that Parachute Pathfinder teams must be organic to all helicopter units if the full potential of air mobility is to be exploited. A proposal to establish a Pathfinder squadron in each Marine air group is now under study. As conceived, the squadron would contain six Pathfinder teams—two per aircraft squadron in the group.

In this case, Marine Pathfinders, closely coordinated with the air-unit which they must support, would be available to permit maximum utilization of the helicopter's capability of vertical envelopment. Control would be made commensurate with the possibilities of speed and flexibility in troop delivery.

Some of the Marine innovations might well be considered, and perhaps adopted, by the Army. Their emphasis upon the power of vertical envelopment, and upon full-dress training for this kind of assault, also holds some lessons for us. And their organization—primarily because of its breadth—is something we need.

Implementation, of course, is as important as organization. The value of the best laid plans hinges on fulfillment. Unless we have a trained, existing Pathfinder capability—as the Marines do—we may find that our battlefield air mobility is nothing more than a promise.

The opinions expressed in this article are those of the author and do not necessarily reflect official thinking of the Infantry School.

Marine pilots find the light gun (above) aids materially in safe, sure approaches to landing sites.

Marine responsibilities require that their troops be prepared to operate with equal facility from a carrier deck or unimproved loading site.

CAN THE ARMY LAND TOO?

(Continued from page 69)

equipment. One Pathfinder team was created at Fort Benning and one at Fort Rucker. In addition, an allocation of four teams for each field army was established—one team for each aviation battalion.

But this is as far as we have gone. None of the field army teams has actually been organized. In the Airborne division, the division cavalry troop and the battle group supply and transportation platoons can perform certain terminal guidance functions, as a secondary duty of selected personnel. In the Infantry and Armored division, there is not even this improvised guidance capability.

As matters now stand, the Pathfinder concept represents a paradox in our mobility thinking. The Army has accepted the air as the true mobility corridor. Our training circulars characterize air-mobile operations as a "normal part of land combat operations." Yet today, to provide essential guidance for thousands of Army aircraft, we have only two activated Pathfinder teams and a handful of secondary-duty personnel. Obviously, our capability of controlling aircraft within the combat zone during daylight and darkness, during fair weather and foul, and despite enemy interference, is so slight as to cripple our air mobility. Under the present circumstances, air-mobile operations cannot become the "normal part of land combat operations" we intend them to be. In essence, we have the responsibility but not the capability.

The current Pathfinder team consists of two officers and ten enlisted men. It is capable of operating two fixed-wing landing zones, four helicopter landing sites or three drop zones. Its equipment includes electromagnetic and electronic homing devices, pyrotechnics and sufficient Pioneer tools to carve a landing point out of wooded, swampy or otherwise unsuitable terrain. The team may be

Army pathfinders operate homing equipment at a helicopter landing site.

air-landed, or may use the parachute or rope ladder from a hovering helicopter for delivery. It is just what we need.

What we must do is remedy the appalling lack of such teams.

We must give each Infantry, Airborne and Armored division a minimum of one Pathfinder team organic to the division aviation company. These division Pathfinders would provide staff guidance on air-mobility problems. They would have training functions. And, in addition to providing terminal guidance for division aircraft, they would support non-division Army aircraft and Air Force aircraft performing routine supply missions for which no combat control teams were provided.

In addition, we must allow each Army aviation battalion to activate the Pathfinder team now allocated to it, and we should authorize the activation of a second team upon mobilization.

Finally, within units subordinate to division, and within every field army unit anticipating a need for aerial support, we must train certain individuals, as a secondary duty, in methods of employing and controlling this support. We can do this by creating "Pioneer aircraft guides" (PAG), informal equivalents of which were employed in Korea with great success. The Pioneer aircraft guide would use only the equipment found in his unit's TOE. He would not be a parachutist, but would be trained in basic air-ground communication, aircraft characteristics and Pioneer techniques. He would be capable of assisting air-unit Pathfinder teams in air-mobile operations of considerable magnitude, or of acting independently in minor operations involving single aircraft or single flights.

In discussing general guidance requirements, it is important to note that from division to the rear of the combat theater, aircraft guidance, in the form of airfield operating detachments, is entirely adequate. Yet, in the area of actual combat, where guidance is most required, our capability is nearly nonexistent. The rear echelons, then, are well taken care of; the forward echelons are not.

Only with broad, all-echelon ground control such as has been described above will our air mobility become what it has thus far failed to be—a secure, dependable, "normal" element of our ground operations. We have the aircraft. We have the doctrine. But we do not have the ground guidance. This missing link in the chain of air mobility risks our combat superiority on the fluid, wide-ranging battlefield. It is a risk we can't afford to take.

The opinions expressed in this article are those of the authors and do not necessarily reflect official thinking of the Infantry School.

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The Ultimate Weapon

A free translation
of a timeless conversation.

by MSgt W. J. Gunzelman, Jr.

"Hey Klep."

"Yeah?"

"D'Ya' think it's as bad as they say it is?"

"What's as bad as they say it is?"

"You know, Klep. Those new weapons."

"Shut up and quit worryin'. There ain't nothin' to worry about, so forget it."

"I can't help it, Klep. You remember what the Sergeant said about that new weapon. . . ."

"Look Gus, these outposts are spooky enough without you blabbin' about some 'super weapon'. Remember, the 'Sarge' said we had it too."

"Yeah! Fat consolation that is. It just means we'll kill more of them while they kill all of us."

"Fer cripes sake Gus—Listen to me, will ya'? If it was that bad, why would they even fight the war?"

"I dunno'. But I sure wish they wouldn't. There's no reason to do it. They ought to outlaw it."

"Well quit worryin'. Maybe they won't even use it."

"They will Klep, they will. If they don't use it they can't win, and they know it. So they'll use it. And since we've got it we'll use it too, and cripes, what a mess it'll be. I hear they got over four hundred . . ."

"Gus, how can you, a Private, know somethin' the General don't?"

"Klep, I know one thing. I know the first time they used this weapon they leveled a big city and . . ."

"So what Gus! Nobody knew what was comin'. They'd never seen it before. No defense was set up for it."

"No defense for it? Show's how much you know. They say the real danger comes from buildin's collapsin' on ya' and the flash . . ."

"What about the flash?"

"It'll blind you, that's what."

"Nuts."

"Klep, I tell ya' it will."

"Who said, Gus? Who said?"

"I heard 'em talkin'. They was sayin' . . ."

"You heard *them* talkin'. You heard *them* sayin' . . . Phooey. Don't look at it and it won't even hurt your eyes."

"A lot you know. How about the disease?"

"What disease?"

"The one the Lieutenant was talkin' about. That one that's always fatal. Nothin' they can do for it, you just stiffen up and die. He said he saw 'em. People that got too much of it or had been hit by . . ."

"Gus! Fer gosh sakes, Gus! Willya' stop? You can't believe what everybody tells ya'. All he wants to do is get ya' excited."

"He got me excited, Klep. 'Specially when he was talkin' about the burns . . ."

"Wait! Shut up! Look sharp to the left."

"Why?"

"Never mind 'Why', just look. I thought I saw something over by that clump of bushes."

"You don't think they're here already? Klep, you don't think they're here?"

"I don't think nothin'. Just watch."

Their fears were caught up in the knots of anticipation as both men peered into the darkness, each hopeful the other would be wrong about what they thought they saw or didn't see. Tension eased but the silence remained, and Klep wanted silence now.

Gus continued, "Well, I'm still worried."

"Well stop! Why do you think we've been training with new tactics all this while?"

"These new tactics ain't gonna make it easier to die from that stuff."

"You're right, Gus, but if you know what you're doin' you ain't gonna' die. Look! They can't always use it."

"What do ya' mean, 'They can't always use it'? That's not what the . . ."

"Lieutenant said. I know. But I know one of them guys that knows all about it. He said they can't use it all the time. . . ."

"Klep, I heard they're experimentin' with it and soon they'll have weapons that uses it that a man can carry and . . ."

"Gus, Gus, you're crazy. It's impossible. They'll never get it so's one man can handle it. So stop worryin'."

"You expect me to stop worryin' just like that. Stop worryin' he says when tomorrow I might die from this stuff. You want me to stop wor . . ."

"Look, Gus! Soldiers have been dyin' for centuries in wars. You think you're any exception? A rock could fall off that cliff over there and kill ya', or one of their scouts could sneak up tonight while I'm sleepin' and slit your throat. You figger you got a choice on how it's gonna' happen? You're nuts! I don't think . . ."

"Stop it, Klep! I'm scared and you got no right to keep houndin' me like . . ."

"I ain't houndin' ya'. I just want ya' to wise up. These are modern times. You gotta' go along with them. Cripes, Gus! This is the fourteenth century. Gunpowder can't be as terrible as that . . ."

And so it goes. It started with the "Sharpest Tooth" and who knows where it will end?

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If you have a new idea on some item or technique that will help the Infantry, send it to the Editor of *Infantry*. If your suggestion is published, you will receive a free one-year subscription.

. . . install one or two loudspeakers, similar to the LS166/U, in the troop compartment of the armored personnel carrier? Hook these loudspeakers into the vehicle's intercommunication system under the control of the vehicle commander.

At present, the personnel carrier commander must leave his seat and consequently relinquish his observation to issue orders. Even then, the noise level is so high within the carrier that he must shout to be heard. Such a situation can lead to serious misunderstandings.

Installation of a similar system in transport helicopters would also be of great benefit. It is virtually impossible to hear anything except the noise of the helicopter while the aircraft is in flight. This would enable the aircraft commander to provide information to the troops as to landing zones, direction of landing, enemy disposition and situation and other pertinent last-minute details or changes.

The efficiency in operations to be gained by this communication system would be well worth the expense

Capt Harry E. Hall

. . . "marry up" the SS10 ATGM with an infrared heat-seeking device, similar to the Air Force's "Sidewinder," which will seek out the hot exhausts of tanks or vehicles? Advantages would include greater accuracy, since human error would be reduced, and greater range, since, once the initial operator guidance was established, the missile could fly on without its present wire "umbilical cord." Also, a possibility exists that the SS-10, infrared equipped, could be used against helicopters or low-flying aircraft.

Capt Aldo Niccolai

. . . provide a terminal block on the wire reel RL 159/U for attachment of a telephone during wire laying? The terminal would include a flashing device similar to that presently located in each plug of the emergency switchboard SB-18, enabling the wireman to distinguish incoming calls while the reel is turning.

Capt Lee D. Ellis, Jr.

. . . issue lubricant and bore cleaner for weapons in aerosol containers? There would be no waste through spilling, and it would be easier to apply by spraying on the desired amount. This would also make it easier to clean and lubricate those hard-to-get-at places found on most weapons.

Lt Robert C. Rohland

. . . publish 5"x8" cards containing data on non-technical inspection of government property? Inspection of equipment by the non-specialist would be facilitated because the necessity of wading through volumes of TMs and TBs would be eliminated. These cards should contain concise checklists, complete with pictures or diagrams, and should be published for all items of common issue.

Capt L. W. Dyment, Jr.

. . . use the helicopter as a mobile platform for smoke generators? The helicopter's characteristic rotor downwash has been found very useful for crop-dusting and might be successfully applied to very precise application of screening smokes. Wasteful billowing effects would be held to a minimum and response to the needs of the commander would be rapid. One possible helicopter-smoke mission is the screening of terrain corridors utilized by helicopter columns.

Capt P. B. Malone, III

. . . Develop some electronic "spoofing devices" which can be used by individual frontline Infantrymen and by units? Assuming that our potential enemies are developing radar equipment (as we are) which

can detect personnel and equipment at long range, it would seem that a counter to such equipment would be extremely desirable. Unless such equipment is developed, or techniques are devised, patrols (and, in fact, all combat units) will be operating under a severe handicap on the battlefield of the future.

Major, Infantry

. . . make a small device capable of converting high frequency sound into audible sound? With this device, similar to a dog whistle,

soldiers wearing or possessing a receiver tuned to the same frequency could be signaled at night without danger of being detected.

Lt Cosmo M. Barone

. . . develop a rugged, inexpensive, functional wrist watch? The present TOE distribution does not provide watches for all men who need them. A less expensive model would permit wider distribution without affecting the accuracy expected of the current watch.

Team Leader, Rifle Squad

. . . develop a small, rugged camera for use by forward elements in combat? With this camera they could make accurate, permanent records of terrain observed, and captured documents could be photographed for their unit before being forwarded to higher headquarters. A camera of the Polaroid variety would make these records immediately available. A conventional camera would enable prints to be disseminated to other interested forward units. Either would be of great immediate value.

Intelligence Sgt.

ANSWERS TO INFANTRY QUIZ (See page 49)

1. (c) The mission, enemy situation, weather, terrain and the strength of the platoon affect the size of objectives assigned to a platoon; however, the size of the objective should not be greater than can be seized in a single assault. Reference: Par 50k, FM 7-10, Jan 59.

2. (d) The commander of the direct support artillery battalion, *as the fire support coordinator,* will plan the fires of the mortar platoon and integrate them into the fire plan. However, the battle group S3 is still the battle group staff officer primarily concerned with the coordination of maneuver and fire support. Reference: Par 298b, FM 7-40, Aug 59.

3. (c) It is the responsibility of the commander of troops occupying positions or installations to lay out and construct field fortifications. Engineer staff officers assist and advise in the preparation of these field fortifications. Reference: Par 4a, FM 5-15, Oct 59.

4. (b) The Geneva Convention of 1949 provides that in camps where there are no officers, the prisoners' representative is elected by secret ballot by the POW every 6 months. The representative is eligible for reelection. Reference: Par 61a, FM 21-77, Dec 58.

5. (b) Wheeled vehicles cannot travel satisfactorily over flat terrain or roads where the depth of uncompacted snow is in excess of 12 inches. Tracked vehicles, however, which can travel through snow up to 25 to 30 inches in depth, can break trails for wheeled vehicles. Reference: Par 32a, FM 31-71, Jan 59.

6. (d) The short-range radar teams are usually employed in forward company areas to provide surveillance to the front and flanks. When employed in this manner, the teams are normally attached to the company in whose area they are operating. Reference: Par 179, FM 7-40, Aug 59.

7. There are three forward observers located in the platoon headquarters of the weapons platoon. The duties of these individuals include observing and adjusting fire of the mortar squads and, under certain circumstances, of artillery units. Reference: Par 5c and 8c, FM 7-10, Jan 59.

8. In a mounted attack the tanks and the Infantry in personnel carriers may advance either in an integrated formation or with the mounted Infantry following the tanks by bounds. In both cases the tanks lead so as to best utilize their firepower and to provide protection to the armored carriers. Reference: Par 77c, FM 7-10, Jan 59.

9. (b) Engineer troops may be called upon to provide technical assistance, hand and power tools, construction equipment and materials. They do not usually construct fortifications which can be built by combat troops, nor do they furnish indigenous labor, transportation or explosives. Reference: Par 4c, FM 5-15, Oct 59.

10. (d) Final protective fires of the battle group include barrages of organic mortars and supporting artillery. The BG commander employs barrages to cover dangerous avenues of approach into the battle area. He designates the general location of each barrage. The rifle company commander in whose area the barrage is located specifies its exact location on the ground to his artillery observer. This location is then reported to the battle group. Reference: Par 174d, FM 7-41, Aug 59.

WHAT'S NEW FOR INFANTRYMEN

Changes • New Developments • Items of Specific or General Interest to Infantrymen

DAVY CROCKETT

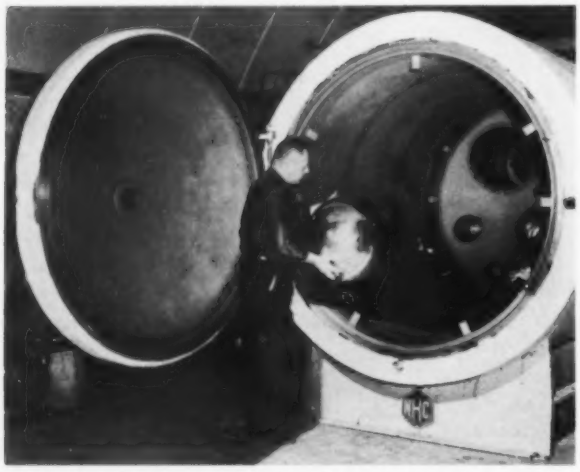
A weapons system called Davy Crockett that will give organic-nuclear firepower to Infantry units is under development by Army Ordnance. This system, when fully developed, will enable Infantry units to use small, low yield nuclear weapons themselves, without having to call for Artillery support, and without endangering nearby friendly units or contaminating the area.

AIR DEFENSE MISSILE

On the drawing boards for use by combat troops is an all-weather, air defense guided missile called the Mauler. It will provide protection for forward elements of a field army from low-flying aircraft and short-range missiles. A self-propelled weapon, it will be able to move with troop columns and maneuver on the battlefield.

TEST CHAMBER

An improved high-altitude test chamber constructed by the National Research Corporation has been put in use by the Army Signal Research and Development Laboratory. Atmospheric pressure in the chamber can be reduced to simulate the virtually air-free environment found one-hundred miles above the earth. Also, a highly efficient refrigeration system and a battery of



infrared lamps make it possible to vary temperatures from 90° below zero to 300° above. These laboratory tests will materially aid the national space program by helping to ensure that equipment and components have been engineered to retain their operating stability.

COLLAPSIBLE FUEL TANK

A giant 50,000-gallon collapsible fuel storage tank that can be rolled up and transported in a canvas carrying case has been recently developed.

The tank, believed to be the largest of its kind, is fabricated of two-ply nylon cloth coated with synthetic rubber. It measures 64 feet long, 24 feet wide and stands approximately 6 feet high when filled to capacity. It weighs approximately 2700 pounds when empty.

This 50,000-gallon tank is the result of a development program begun in 1946; this program has also resulted in development of a 10,000-gallon "pillow" tank that has now become standard for all military services. The larger tank is now undergoing tests at Fort Belvoir.

PLASTIC FOAM SHELTER

The use of plastic foam to form a low-cost lightweight, weatherproof Infantryman's shelter is being studied for future use.

A "self-rising" plastic foam mixture, which hardens in less than an hour, is sprayed over an inflated canvas dome, producing a shelter much like an igloo. The foam can be mixed at the site for the structure, and when sprayed on the dome, expands outward forming a 1.5-inch thickness.

The foam can be readily cut with a bayonet, a factor which allows the cutout of doors and windows of any size desired, wherever needed. Color additives can be blended with the chemical mixture for camouflage purposes.

MARINES TO TEST GERMAN COBRA

The Marine Corps will soon conduct tests on the German-developed man-transportable Cobra missile which is capable of knocking out any of today's tanks. The missile has a high kill-probability between 500- and 1760-yard ranges and weighs only 20 pounds, including a 5.5-pound shaped charge high explosive warhead. The weapon is now operational in the West German Army.

The Cobra requires no special launcher and is fired from ground emplacements. The missile is wire-controlled in flight by a 44-pound electronic control box to which eight missiles can be connected for firing in sequence. By manipulating a guide stick, the gunner can guide the missile with electronic signals transmitted along a fine wire laid out by the missile in its flight.

MICROFILM MAP LOCATOR

The use of microfilm maps coupled with an automatic selector gives promise of easier and quicker location of distant targets for Army field commanders, when a device now under development is introduced.

The map coordinate locating instrument is being designed to select automatically the correct map from a compartment containing more than 11,000 different microfilmed maps. Selection of the correct map will be accomplished by the operator's indicating the map coordinates of the point to be located. The design also calls for immediate projection of the map onto a large viewing screen.

The new device will be about six feet tall, two and a half feet deep and three and a half feet wide, and will weigh around one ton. With the map compartment fully loaded, the Locator should require about one fifth the space now required for storage of the same number of standard map sheets.

SHILLELAGH

The Army continues to make progress in the tactical missile field with contracts let for the new Shillelagh. A lightweight, close-in support system designed for the use of ground troops, the Shillelagh continues to bear security classifications on specific capabilities.

RAINPROOFING

A new experimental water-repellent finish for combat clothing that has successfully withstood a continuous one-inch-per-hour downpour for seven days has been developed by the Army Quartermaster.

Called "Quarpel," the new finish is oil-resistant and can be laundered or dry cleaned and still remain water-repellent; it is also vapor permeable and comfortable for the life of the garment.

Quarpel has been so successful in tests that research technologists say it may have eventual wide application in commercial rainproofing of clothing as well as for Army combat clothing use.

STOL AIRCRAFT

The Mohawk, tentatively scheduled to be service tested by the Army this year, is another member of the Army's family of STOL observation aircraft. A two-engine, two-place aircraft, the Mohawk is powered by two 1005 horsepower turbo-prop engines, has a range of approximately 1400 nautical miles and weighs about 8000 pounds unloaded. A minimum landing air speed of 40 knots reduces the length of unimproved runway the Mohawk requires.

RELEASE

The Capewell canopy release assembly promises to relieve parachutists of the danger of being dragged by their parachute once they are on the drop zone. This device (shown with the safety released) weighs about eleven ounces, is sturdy and dependable. Tests were completed in December, 1959, and parachutists should be finding the Capewell on their T-10 harnesses in the near future.

MISSILE TV

The Army is developing television equipment designed to take guesswork and computation out of missile target-damage assessment. A small capsule containing a TV camera is released from the missile shortly before impact and transmits to distant viewers a picture revealing point of impact and results obtained. Extensive ground testing has been completed with air testing slated for the near future.

Continued on page 78

FREE FLIGHT SYSTEM

Commercial development continues on a free-flight system designed to assist combat troops in overcoming obstacles. The duration of flight will vary with thrust and acceleration desired, but an idea of maximum capability is indicated by the device's potential to lift a 240-pound man 2200 feet in about 20 seconds. Thrust is provided by hydrogen-peroxide passed over a silver catalyst to transform it to superheated steam. Tests have shown that steam temperatures drop to less than 100° five feet from the device. Control of the rockets, which are strapped to the operator's back, is performed manually. The right hand controls direction and the left controls speed. A contract has been let to Aerojet-General to determine the feasibility of building a practical configuration that will meet Army requirements.

RADIATION RESEARCH

Tests with research animals injected with a solution of "mercapton" (a chemical which increases the body's resistance to radiation), have proved them able to survive normally lethal doses of radiation poisoning. Although "mercapton" is an effective anti-radiation agent, it is also toxic to many living organisms. Consequently, the Army Medical Service is conducting a major research program to discover forms of the chemical which are less harmful, yet still retain protective potential.

COMPACT STOVE

Development of a compact, lightweight stove should prove a boon to soldiers isolated from kitchen facilities. Weighing just one pound, it can burn leaded gasoline without clogging, and the metal case in which it is carried can be used to heat liquids and foods.

IGLOO

US Army Polar Research and Development is currently testing a portable "igloo" made of rubberized canvas and supported by air inflation. Members of the Army team engaged in field research operations report that comfortable living is possible in the air geodome at temperatures well below zero.

CONTAINER

A new weapons and individual equipment container for parachutists is undergoing final tests. The novel features peculiar to this container include a one-handed quick release (which offers foolproof disengaging from the harness) as well as adjustable carrying straps which allow conversion to a field pack. The container measures 12″ x 12″ x 36″ extended, reducible to 12″ x 12″ x 18″, and should be in the hands of troops soon.

New Training Literature & Films

Monthly List of Instructional Material

The *Monthly List,* an official publication of the Infantry School, is produced to facilitate the coordination of Infantry doctrine among Army service schools and to offer Infantry School instructional materials to Army agencies which conduct, support or monitor school-type instruction. The *Monthly List* is distributed under the provisions of USCONARC Memorandum Number 48, dated 14 October 1958, and each authorized addressee is furnished one gratuitous copy of any item listed which he specifically requests for official use.

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Items not marked with an asterisk are produced in limited quantities for resident instruction at the Infantry School and are not available for purchase. However, a unit or agency having a strong official need for any of these items may request a gratuitous copy from the Doctrine Publications Office, USAIS, Fort Benning, Ga. Such requests must state the purpose for which the material is needed and must include the official title and unit or agency address of the requester. Properly justified requests will be filled so long as the supply lasts.

New Developments in Tactics, Techniques and Materiel for Infantry and Supporting Arms. An instructional pamphlet covering the subject of new developments as they affect the combat soldier of tomorrow. This material outlines major developments in tactics, techniques, weapons, and equipment with major emphasis on recent trends and thinking of the fighting man.

***Command and Staff Responsibilities—Nuclear Weapons Employment,** 2406-USAR(RDT). Integrated conference and map exercise covering the basic concepts and doctrine in tactical nuclear weapons employment; to familiarize the student with command responsibilities and nuclear weapons considerations in command and staff planning. $.75

***Nuclear Weapons and Delivery Systems,** 2409-USAR(RDT). Conference on nuclear weapons to include basic physics of nuclear detonation, types of weapons to include principles of operation, characteristics of nuclear weapons delivery systems, and effects data in DA Pam 39-1. This material is applicable to nuclear warfare. $.25

***Introduction to Nuclear Weapons Effects,** 2410-S-USAR(RDT). Integrated conference and demonstration covering the types of bursts and physical effects of nuclear explosions. $.10

***Use of Unclassified Effects Data and the Weapon Selector System of Target Analysis,** 2436-USAR-(RDT). Conference and practical exercise on the data contained in DA Pam 39-1 and its use; basis and use of the weapons selector, to include troop safety. $.35

Tactical Employment of Army Aviation, 6105-A2. Integrated conference and practical exercise covering the origin, missions and tactical employment of the Infantry division aviation company with emphasis on aviation company elements supporting battle group operations in a nuclear war.

Introduction to Combat Intelligence, 6205-A2. Integrated conference and practical exercise covering the duties and functions of the BG S2, origin of the Infantry division and battle group intelligence sections; the intelligence estimate, the use of intelligence, the intelligence cycle and the production of combat intelligence.

Processing of Information and Use of Intelligence, 6225-A6. Practical exercise on posting the situation map; conversion of information into usable intelligence; dissemination of timely information and intelligence to proper users; criteria which determine adequate dissemination; means and methods of dissemination; form, purpose and general content of spot reports, shelling and bomb reports.

Intelligence Training, 6244-A1. Conference on the responsibilities and procedures employed in intelligence training. Problem stresses the building of intelligence consciousness and the importance of integrating intelligence training with individual and unit training.

Operation Orders and Plans, 6320-A6. Practical exercise which encompasses and illustrates the techniques and procedures utilized in the preparation of defense orders, operation plans, and warning orders; principles of issuance and receipt of oral orders and tactical situations involving a battle group.

Joint Air-Ground Operations, 6331-A2. Practical exercise covering the coordination of requests for close air support; the coordination and control of aircraft flying close air support; primary consideration in selecting targets for close air support; and the importance of the time element in the processing of requests for close air support.

Tactical Psychological Warfare, 6345-I1. Integrated conference and practical exercise discussing the role of psychological warfare as a supporting weapon within the Infantry unit; the media available to Infantry units; defense against enemy propaganda.

***Command Post Organization and Displacement,** 6435-I2 USAR(RDT). Integrated conference and practical exercise on command post organization and

displacement and on interior arrangement of an assembly area. This material is applicable to nuclear and non-nuclear warfare. $.35

Battle Group in Attack, 6664-I6. Map exercise on terrain which is relatively flat permitting free cross-country movement. The battle group moves on two axes, emphasizing the problems of control necessary under such situations and the requirement for adequate communications to effect this control.

TRAINING FILMS

The following training films have been approved for release to requesting units:

R&D #10, Army Research and Development—Film Report No. 10 (U), 24 minutes.

TF 5-2758, The Mine Detecting Set AN/PRS-4, 14 minutes.

TF 6-2800, Artillery Battalion Survey—Part I—Methods, 24 minutes.

TF 7-2759, Known Distance Rifle Marksmanship, 28 minutes.

TF 7-2797, Army Pathfinder Team, 30 minutes.

TF 9-2777, Road Test Procedures for Tactical Wheeled Vehicles Equipped with Hydramatic Transmission, 28 minutes.

TF 11-2766, Radio Relay Equipment AN/TRC-35 and 36—Part IV—System Line Up Procedures, 24 minutes.

TF 17-2778, Road Test Procedures for Tactical Tracked Vehicles, 29 minutes.

TF 17-2779, Range Cards for Tanks, 25 minutes.

TF 20-2802, Land Mine Warfare—Part V—Arming, Disarming and Camouflage, 29 minutes.

TF 20-2803, Land Mine Warfare—Part VIII—Nuisance Mining, 17 minutes.

TF 20-2832, What Caused the Crash—Part I—The Pre-Accident Plan (Army Aircraft), 15 minutes.

TF 20-2833, What Caused the Crash—Part II—Crash Rescue and Investigation (Army Aircraft), 33 minutes.

TF 20-2834, The Case Method of Instruction—Part I, 19 minutes.

TF 20-2835, The Case Method of Instruction—Part II, 23 minutes.

TF 20-2836, The Case Method of Instruction—Part III, 19 minutes.

TF 46-2669, Helicopter Basic Instrument Flight—Part I, 22 minutes.

TF 55-2786, Army Aircraft—Methods of Detecting Flaws in Aircraft Parts, 27 minutes.

The following manuals and training literature have recently been printed by Department of the Army and are available to instructors through normal supply channels:

FM 7-24, Communication in Infantry and Airborne Divisions (revision).

C1 to FM 21-20, Physical Training.

C1 to FM 21-77A, Evasion and Escape.

C1 to TM 21-200, Physical Conditioning.

TRAINING LITERATURE

C1 to ATP 7-17, Rifle Company, Infantry and Airborne Division Battle Groups, Light Weapons Infantryman, Heavy Weapons Infantryman.

ATT 7-52, Security Platoon, Headquarters and Headquarters Company, Infantry Brigade, Separate.

ASubjScd 21-31, U.S. Rifle, Caliber .30, M1.

NEW EXTENSION COURSES FOR NCOs

The Infantry School is now offering a new special extension course titled: "Non-Commissioned Officers Leadership and Career Opportunities." This course, which carries 20 credit hours, was developed to provide instruction to noncommissioned officers in the principles of leadership and problems of command as they relate to the NCO. The course is considered to be particularly timely and valuable in view of the increased emphasis on leadership responsibilities of NCOs. In addition, the course contains one lesson on the duties and responsibilities of first sergeants and sergeants major. Much of the material in this lesson was developed by a panel of highly experienced senior NCOs from units of the Infantry School, the Infantry Center and the 2d Infantry Division.

The course is designed to provide instruction which will prepare NCOs for assumption of greater responsibilities and aid in broad career development. However, to be most effective, the course should be supplemented by other instruction in the individual's particular specialty or area of interest as may be required. NCOs wishing to enroll should consult DA Pamphlet 350-60 for enrollment procedures or write to the Commandant, United States Army Infantry School, Fort Benning, Georgia, ATTN: Deputy Director for Extension Courses.

NEW EXTENSION COURSES FOR OFFICERS

The rapidly changing developments in Infantry organization, equipment, tactics and techniques have created the need for a means of providing current information to those officers who do not have access to Infantry School classrooms. To meet this need (which exists in both the active Army and Reserve Components), the US Army Infantry School has developed a special refresher extension course which closely parallels the two-week resident refresher course.

This course consists of three subcourses totaling 47 credit hours and includes the latest information on organization and equipment of the Infantry and Airborne divisions; weapons of the battle group; signal communications; ground mobility; operations; intelligence; role of the battle group in mobile defense; battle group in the attack; and Army airlanded and airborne battle group tactics. It is felt that this course is particularly timely in view of the recent reorganization of Reserve and National Guard divisions and attendant change of branch for many officers. Enrollment procedures are the same as indicated for the NCO course.

AN ACKNOWLEDGED CREDENTIAL . . .

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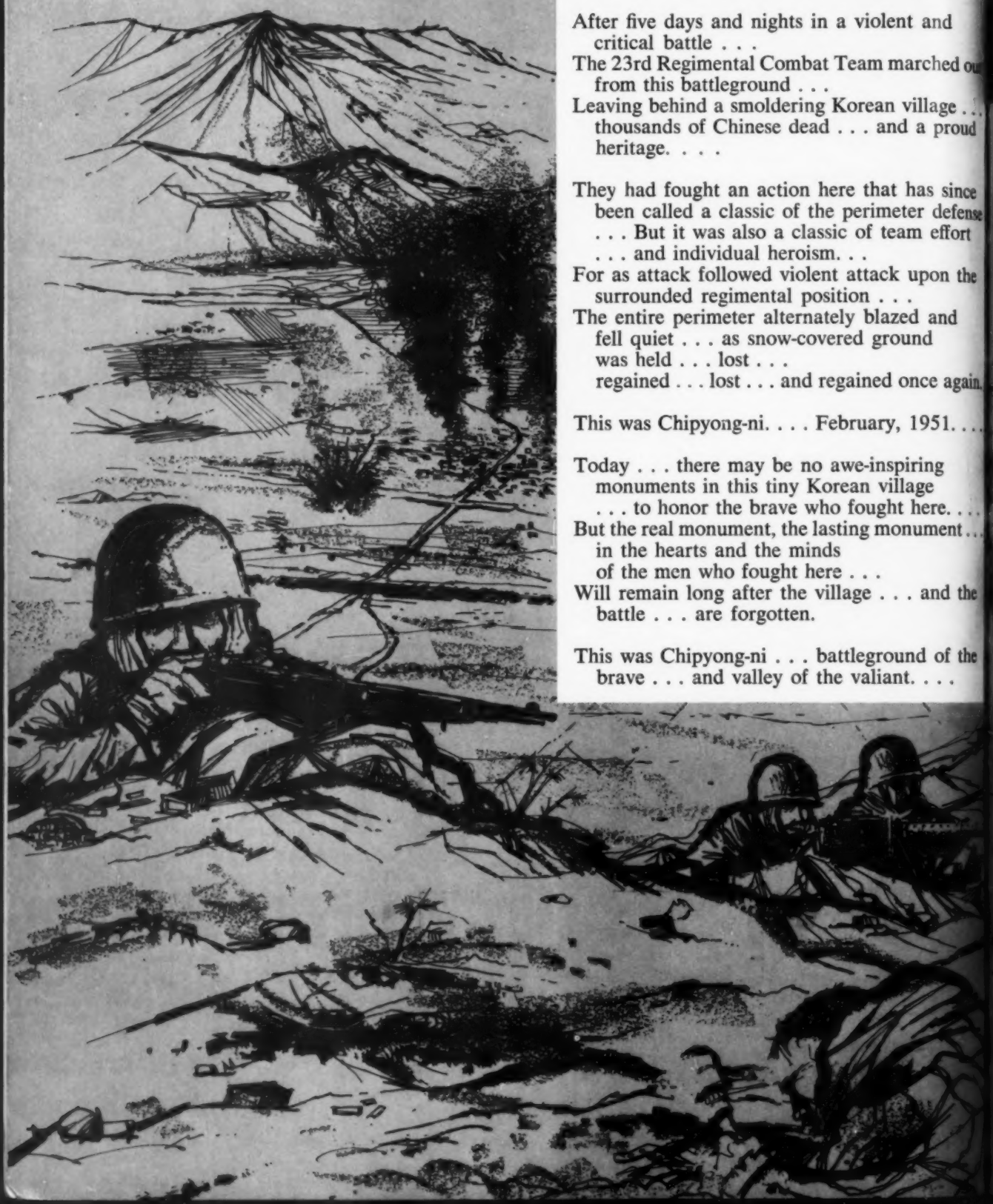
Chipyong-ni Valley of the Valiant



This was Chipyong-ni . . . February, 1951. . . .

After five days and nights in a violent and critical battle . . .
The 23rd Regimental Combat Team marched out from this battleground . . .
Leaving behind a smoldering Korean village . . . thousands of Chinese dead . . . and a proud heritage. . . .

They had fought an action here that has since been called a classic of the perimeter defense . . . But it was also a classic of team effort . . . and individual heroism. . .
For as attack followed violent attack upon the surrounded regimental position . . .
The entire perimeter alternately blazed and fell quiet . . . as snow-covered ground was held . . . lost . . . regained . . . lost . . . and regained once again.

This was Chipyong-ni. . . . February, 1951. . . .

Today . . . there may be no awe-inspiring monuments in this tiny Korean village . . . to honor the brave who fought here. . . .
But the real monument, the lasting monument . . . in the hearts and the minds of the men who fought here . . .
Will remain long after the village . . . and the battle . . . are forgotten.

This was Chipyong-ni . . . battleground of the brave . . . and valley of the valiant. . . .